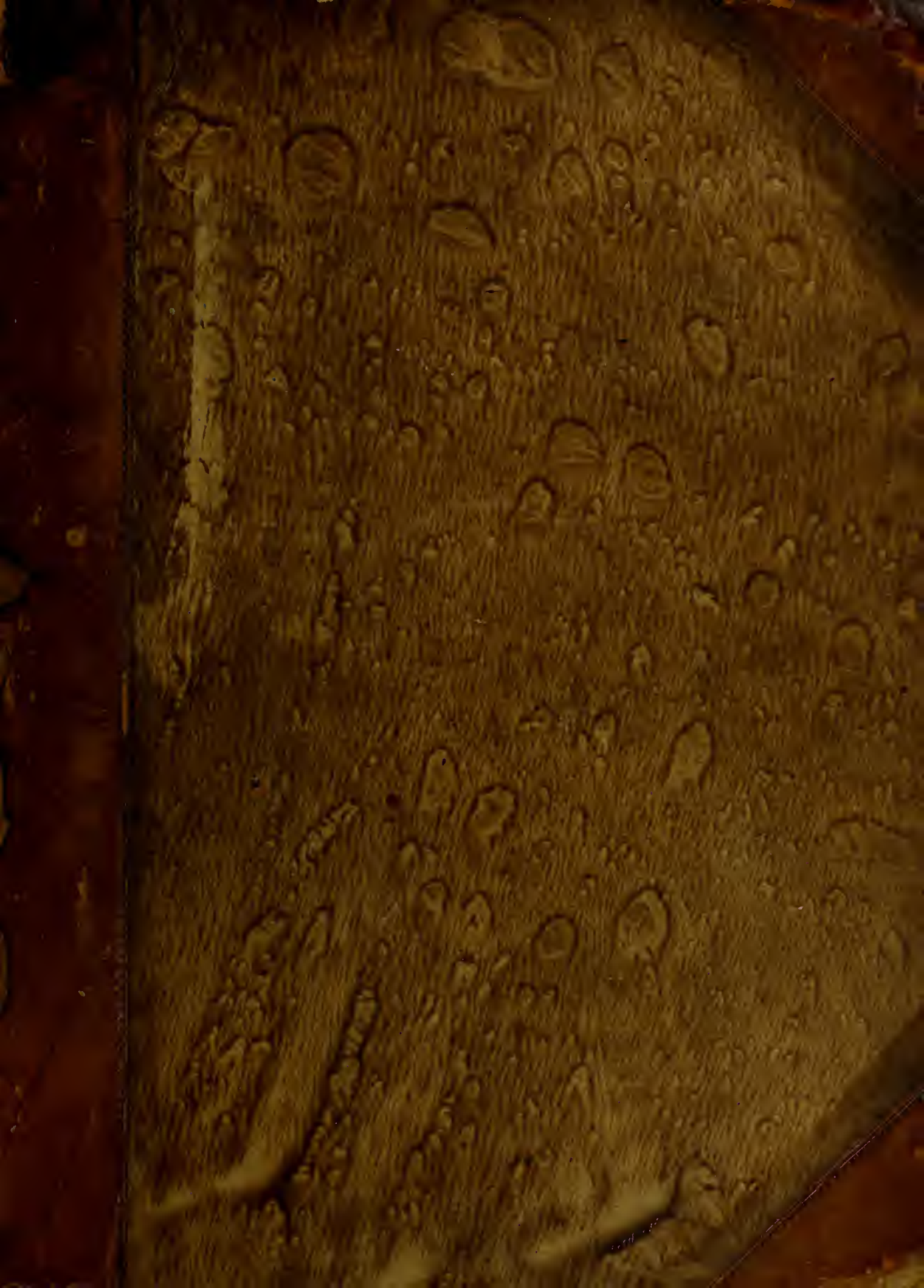

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HORTUS MEDICUS,

OR

FIGURES AND DESCRIPTIONS

OF THE MORE IMPORTANT

PLANTS USED IN MEDICINE,

OR POSSESSED OF POISONOUS QUALITIES;

WITH THEIR MEDICAL PROPERTIES, CHEMICAL ANALYSIS, &c. &c.

BY

GEORGE GRAVES,

FELLOW OF THE LINNEAN SOCIETY, EDITOR OF THE NEW EDITION OF CURTIS'S FLORA LONDINENSIS, AUTHOR OF A MONOGRAPH ON THE BRITISH GRASSES, &c. &c.

THE CHEMICAL AND MEDICAL DEPARTMENTS BY

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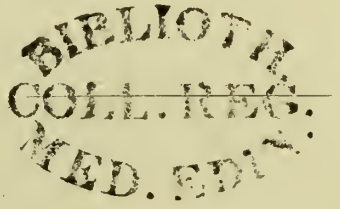

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TO THE

JUNIOR MEMBERS AND STUDENTS

OF THE

MEDICAL PROFESSION,

THIS VOLUME,

COMPOSED WITH THE VIEW OF AIDING THEM IN ACQUIRING

A COMPETENT KNOWLEDGE OF MEDICAL BOTANY,

IS MOST RESPECTFULLY INSCRIBED BY

GEORGE GRAVES.

PREFACE.

The expensive forms and extent of the modern works on Medical Botany have induced the author to attempt the present publication, in which such plants only are introduced as are in present use by British Practitioners, or, from being endued with poisonous qualities, are likely to call for the attention of medical men to remedy or alleviate their effects.

The author takes this opportunity to return his most sincere acknowledgments to Dr Christison, the learned Professor of Materia Medica in this University, for his valuable assistance throughout the progress of the work; to Dr Graham, Professor of Botany; and Dr Greville, the well-known author of the Scottish Cryptogamic Flora, &c. &c. for the use of their valuable libraries; to Mr Macnab, Superintendant of the Royal Botanic Garden; and to Messrs Butler, Duncan and Flockhart, and Mr R. Lindsay, Druggists of this city, for valuable information and specimens of drugs. And, should his efforts be found useful in facilitating the study of the important science of medicine, the object he had in view will be accomplished.

March 9, 1834.

ADDENDA ET CORRIGENDA.

Plate 12, *pro* Mezereon *lege* Mezereum.

Page 40, *line* 9, 18, 44, et 27, *pro* Rhattany *lege* Rhatany.

Plate 25, *pro* Bonplandia trifoliata *lege* Galipea officinalis.

Page 128, add references to Plate 32 :

Fig. 4, Floret magnified ; Fig. 5, Germen and Stigmas; 6, 7, ripe seeds ; Fig. 8, Ergot, *a*. abortive ; Fig. 9, Transverse Section of the Ergotized Seed; Fig. 10, Longitudinal Section of the same, *b*. Embryo, all except Fig. 4 natural size.

—— 131, at the conclusion of the article Colchicum, add references to Plate 33 :

Fig. 1, Unripe Capsules; Fig. 2, Transverse Section of the same ; Fig. 3, Styles attached to the young germens, all natural size.

—— 155, add references to Plate 36 :

Fig. 1, Calix ; Fig. 2, a Petal with the Stamens and Styles ; Fig. 3, Stamens ; Fig. 4, Styles ; Fig. 5, Stamen magnified ; Fig. 6, Germen ; Fig. 7, single Seed.

Plate 38, *pro* Drimys *lege* Drymis.

Page 214, *line* 6, *pro* Myrtus vulgaris *lege* Myrtus Pimenta.

—— 241, — 19, *after* English *add* market.

—— 265, — 28, *pro* volatile *lege* essential.

Digitalis purpurea.

Published by Adam Black. Jan.y 1833.

W.H. Lizars sculp.

DIGITALIS PURPUREA. *Purple Foxglove.*

Class and Order, DIDYNAMIA ANGIOSPERMIA. Nat. Ord. SCROPHULARIÆ, Juss.

GEN. CHAR. *Calix* of five unequal segments; *Corolla* campanulate, swollen beneath, with four or five unequal lobes; *Capsule* of two cells; *Seeds* numerous.

Digitalis *purpurea*; segments of the calix ovate-acute; corolla obtuse, its upper lip scarcely divided; leaves ovate, lanceolate, crenate, downy.

D. purpurea, *Linn. Sp. Pl.* p. 866. *Smith, Flora Brit.* 665. *Engl. Bot.* t. 1297. *Woodville, Med. Bot.* p. 71, tab. 24. *Fl. Lond.* ed. 2. v. i. *Lindley, Monograph on Digitalis*, p. 2. *Hooker, Br. Flora*, p. 289.

ROOT biennial, or occasionally of longer duration, fibrous; stem erect, three to four, or even six feet high, round, leafy, branching, covered with a minute pubescence; leaves large, veined, beneath paler, and downy; flowers pendulous, in long spikes, usually all growing from one side, and hanging one over the other, of a full purple outside, the mouth and interior, elegantly marked with rings and specks of a deeper or paler colour. A variety is sometimes to be met with in the wild state, having white, or rather cream-coloured, flowers, which is likewise commonly cultivated in gardens.

The Foxglove is one of the most common, as well as ornamental, of our native plants, abounding in almost every soil and situation, and, from its size and elegance, must command the attention of every one disposed to admire the beauties of Flora. The genus is somewhat extensive; upwards of twenty species are figured by Professor Lindley in his Monograph on the genus; and, as far as yet ascertained, they are endued with the same properties as the common kind, but in greater or lesser degrees of intensity.

Its leaves are collected when the plants are coming into flower, and are often purchased by the druggists in a dry state, than which nothing can be more absurd, as they not only lose much of their active properties by being long dried, but likewise are subject to adulteration by the admixture of other leaves, which in a dry state are not likely to be detected by an inexperienced botanist.

Some writers recommend the leaves to be dried by exposure to heat, which renders them less active, as much of their taste and smell is volatile, and liable to be carried off by heat; a preferable method is to gather the plants in dry weather, and suspend them by the roots in a shady place, where they are exposed to a current of air; when the leaves become dry, they should be removed from the stalks, and packed in close-stopped opaque bottles.—G.

Digitalis, whether employed for the purpose of lessening the rapidity of the pulse, and thus diminishing vascular action, or with the view of increasing the activity of the absorbents, or for promoting the secretion of urine, is both a powerful and useful remedy. It is used in inflammatory affections, chiefly of the chest, in palpitation, arising from hypertrophy or increased action, in phrenitis, * in anasarca and hydrothorax, in scrofula, † in the leucophlegmatic affection following measles, ‡ and in mania arising from effusion. § Though generally admitted to be useful, Digitalis is a remedy which must be employed with the greatest caution, inasmuch as its effects on different constitutions are not by any means uniform, and as all the preparations with which we are yet acquainted, are liable to variations, which can only be ascertained by trial on the patient. For this reason, it is always proper, even when the patient has become inured to its use, to commence every fresh quantity of either leaves, extract, or tincture, as if the person were not habituated to its effects. In this way many accidents which occur might be avoided, although, from the almost peculiar property of accumulating on the system, they will occasionally take place. The symptoms produced by an over-dose or by accumulation, are nausea, vertigo, depression, great anxiety, dryness and heat of the mouth and throat, confused sight, sometimes coma or convulsions, and rarely syncope. In cases in which convulsions occur, death generally follows at an interval of two days or more. A case is mentioned by Dr Blackall, in which death did not take place for three weeks.

The effects of digitalis, even in more favourable cases, continue for some time,—particularly the slowness of pulse. The treatment generally recommended is the administration of diffusible stimuli, such as ether and ammonia, combined with opium or aromatics. Opium in the form of clyster has also been found useful. Blisters to the epigastrium, and sinapisms to the legs and thighs, are also mentioned.

Orfila ‖ in his work on poisons, and Richard, ¶ both advocate the doctrine of the stimulating property of digitalis.

Dr A. T. Thomson ** divides its qualities into stimulant and sedative, referring to the headach, heat of skin, dryness of mouth and fauces, as proofs of the former property, and to the sinking of pulse and depression, as evidences of the latter.

In animals which have been killed by the action of digitalis, the blood is generally fluid, and often of a bright-red; the lungs are occasionally injected and even inflamed, but the alimentary canal is seldom much affected. No accurate account has yet been published of the appearances after death in the human subject.

From what has already been stated in regard to the uncertain effects of digitalis on the animal economy, it will be readily admitted, the obtaining of a preparation possessed of uniform strength, and retaining the properties of the plant, would be essential. With this view, the analysis has been undertaken by many continental chemists in expectation of finding an alkaloid or active principle possessing the medical properties of the plant. The

* Dr A. T. Thomson's Elements of Mat. Med. and Therapeutics, Vol. i. p. 579.

† Richard, Histoire Naturelle Medicale, Tome ii. p. 76.

‡ Archives Generale de Medecine, Tome vi. p. 78.

§ Duncan's Dispensatory, p. 336.

‖ Toxicologie Generale, Tome ii. p. 286.

¶ Elemens d'Histoire Nat. Medicale, Tome ii. p. 77.

** El. Mat. Med. and Ther. Vol. i. p. 580.

analysis by Rein and Hasse is the first which I shall take notice of.* They found that 100 parts of the dried plant contain 5.5 of green soft resin, soluble in alcohol, ether, and the volatile oils, and having properties intermediate between resin and fixed oil. In this Hasse conceived the active principle to reside, and he was confirmed in this opinion by finding that the sediment or feculence deposited by the fresh juice was active as a medicine, and consisted almost entirely of this resin.

M. Le Royer † gives the following description of what he conceives to be the active principle. He says it is of a brown colour, unctuous consistence, soluble in alcohol, ether, and water, acrid to the taste, and having a feeble alkaline action. When dissolved in alcohol, and rapidly evaporated, it presents a crystalline appearance, but is deliquescent. To this principle he gives the name of *Digitaline*.

M. Pauguy discovered a substance of an entirely different nature, to which he has given the same name as M. Le Royer. It is described as being, white, crystalline, acrid, soluble in alcohol, having a decidedly alkaline reaction, and forming crystallizable salts with acids.‡

Planiava obtained *digitaline* in large quantity (a quarter of an ounce from a pound of digitalis) by the following process:—He exhausted the watery extract by ether, and distilled the etherial tincture with water, for the purpose of separating the chlorophylle; the watery solution which remained was then mixed with oxide of lead, and evaporated to dryness; this was again acted on by ether, on evaporating which, a transparent yellow extractiform mass was left, not showing the slightest tendency to crystallize. § Dulong d'Astafort recommends a process somewhat analogous to the above. The matter he obtained was of an orange-colour, bitter, fragile in the cold, and becoming unctuous when heated. Its solutions were precipitated by acetate of lead and infusion of galls.‖

Dr A. T. Thomson ¶ says, the preparation he considers uniform, is the etherial tincture, evaporated on the surface of water to the consistence of extract; but this is as liable to variety of strength as any other, because the chlorophylle, which forms the bulk of the etherial extract, exists equally in the inert as in the most active specimens of the plant; and we have no means of determining the proportion of active matter which the said extract may contain. Besides this, if Planiava's process for obtaining *digitaline* be correct, the whole, or at least the greater part, of the active matter will be retained by the water.

While engaged in the chemical examination of Digitalis and several other narcotics, it occurred to me that their Empyreumatic Oils might possess some interest in a toxicological and chemical point of view; and as the results have confirmed this idea, I shall shortly detail them, in as far as they are immediately connected with Digitalis.

When the dried leaves of the foxglove are submitted to destructive distillation, a small quantity of aqueous fluid, of a yellowish colour, first passes over; as the process advances, a dark-yellow, and then a reddish-brown oil are formed, and collect in the receiver.

During the whole of the process, a quantity of thick, dense, pungent smoke is evolved, consisting principally of empyreumatic oil in the form of vapour. A crystalline crust, (carbonate of ammonia,) collects in the beak of the retort, and the watery liquid is found to be strongly impregnated with this salt. The oil is semi-solid, of a dark-brown colour by re-

* Berzelius, Traité de Chimie, vi. 276.
† Bibliotheque Universelle, Sect. Sciences et Arts, xxiv. 104.
‡ Duncan's Supplement, p. 49.
§ Berzelius, Traité de Chimie, vi. 277.
‖ Journal de Chim. Med. ii. 588.
¶ Elements of Mat. Med. and Therap. i. 580.

flected, and of a reddish-brown (when rendered fluid by heat,) by transmitted light. Its taste is pungent, and causes a copious secretion of saliva. The odour is disagreeable, and resembles that of the coarsest tobacco.

With boiling alcohol or ether, it forms a transparent deep-brown solution, which deposits on cooling a number of flocculi, showing under the microscope a structure partly globular, partly crystalline. By spontaneous evaporation in a test tube, small crystals may be observed, and the globules may be distinguished by the naked eye; they are colourless, transparent, and semifluid. The dark-coloured matter gradually decreases in bulk and increases in consistence, becoming at last nearly solid. From the ample details given by Berzelius of the chemical nature of empyreumatic oil, I did not pursue this part of the subject farther, * but proceeded to examine the poisonous qualities.

Exp. 1. Four drops of the oil, slightly warmed, were introduced into a wound on the inside of a rabbit's thigh. In twenty minutes, he began to move his fore legs rapidly and convulsively; after continuing this for some time, he lay down on his belly, with his extremities stretched out, and remained quiet for nearly ten minutes; he then began to run about with great rapidity, frequently striking the ground with his hind legs, and appearing watchful and alarmed.

In about three quarters of an hour after the oil had been given, he seemed drowsy, but as he could be easily roused, and appeared a good deal recovered, he was shut up, and at the expiration of fourteen hours appeared perfectly well. As the oil used in this experiment had been shaken with water, to free it from carbonate of ammonia, I thought it possible that the poisonous portion might have been dissolved. To ascertain this point, I procured about two drachms of a fresh portion of oil, and washed it repeatedly in separate portions of water, amounting altogether to rather more than eight ounces. The water became coloured, and acquired the smell and taste of the oil in a high degree; to prevent any effect from the dissolved carbonate of ammonia, acetic acid was added in slight excess.

Exp. 2. At a quarter to three P. M. six drachms of the solution, just now mentioned, were thrown into the rectum of a strong rabbit, and retained by ligature. In five minutes, the animal appeared drowsy, but could easily be roused; at six minutes before three he had partly lost the use of his extremities; at three he was lying on his side, and when placed upright immediately fell over again; at six minutes after three, tremors, almost amounting to convulsion, came on; at ten minutes, he became convulsed; the head was reflected on the back, and the extremities stretched frequently and forcibly out. A quiet interval of three minutes' duration succeeded, in which the breathing was spasmodic and hurried, and the action of the heart accelerated; the sensibility to surrounding objects seemed partly restored, but all power of voluntary motion was lost. The convulsions became more frequent, and in the last attacks there was distinct opisthotonos; the intervals were shorter; the breathing and motion of the heart more accelerated, and death took place at half-past three;—three quarters of an hour after the exhibition of the poison.

On opening the thorax, the heart was found beating at the rate of 120 in the minute, and continued to contract for twelve minutes: when touched with a sharp-pointed instru-

* On turning up the article *Distillation Sèche* in Berzelius' Chemistry, I found these different substances had been separated and accurately analyzed by M. Reichenbauh, who has given the name of Paraffine to the crystalline; Eupion to the fluid globules; and Pyretine to the dark-coloured matter.—Berzelius, Traité de Chimie, vi. 635.

ment, twenty minutes after death, the contractions were renewed. The vessels on the surface of the brain were gorged with blood, and the organ itself seemed more vascular than natural.

Exp. 3. Fifteen drops of the oil, from which the solution used in Exp. 2. had been obtained, were given to a rabbit; in five minutes he seemed giddy; in twenty, he had convulsive twitchings of the extremities, and was similarly affected with the rabbit in Exp. 1. He was apparently well in twenty-four hours.

Exp. 4. To the rabbit used in last experiment, two ounces of the solution (mentioned in Exp. 2.) were administered by the rectum. He died in twenty minutes, after having experienced nearly the same symptoms as in the second experiment, with this addition, that the opisthotonos was more violent, and the convulsions more frequent; in both, a particular cry, resembling a short bark, accompanied each attack of convulsion.

The aqueous fluid which comes over with the empyreumatic, is highly poisonous; two drachms killed a young rabbit in ten minutes, with almost the same symptoms described in Exp. 2. and 4.

Officinal. Folia et semina, *Lond.* Folia, *Lond. Edin.*

Officinal preparations. Tinctura, *Lond. Edin. Dub.* Infusum, *Lond. Edin.* Decoctum, *Dub.*

Dosis, *a* gtt. x. *ad* xi. Tincturæ, *a* ℥ ss. *ad* ℥iss. Infusi et *a* ʒi *ad* ʒii. Decocti.—J. D. M.

References to Plate 1.

Fig. 1, Calix; Fig. 2, Germen; Fig. 3, Stamens after the pollen is discharged; Fig. 4, Stamens before discharging their pollen; Fig. 5, Capsule; Fig. 6, Seeds.

PAPAVER Rhœas. Smooth round-headed Poppy.

Class and Order, Polyandria Monogynia. Nat. Ord. Papaveraceæ.

Gen. Char. *Calix* of two leaves; *Petals* four; *Stigma* sessile, radiated; *Capsule* one-celled, opening with pores beneath the persistent stigma.

Papaver *Rhœas*; capsules smooth, nearly round; stems many-flowered, bristly, the hairs spreading; leaves pinnatifid.

P. Rhœas, *Linn. Sp. Pl.* p. 762. *Fl. Brit.* p. 567. *Engl. Bot.* t. 645. *Fl. Lond.* ed. 2, v. ii. *Woodville, Med. Bot.* t. 186. *Hooker Brit. Fl.* p. 255.

Root annual, simple; stalk from one to two feet high or more, upright, branched, hairy; flower-stalk upright, each supporting one flower, having the hairs projecting horizontally; calix of two leaves, membranous at the edge, deciduous, hairy, the hairs inclining towards the point; corolla large; the alternate petals smaller, and all of them marked with a shining black spot at the base: Seed-vessel shape of an egg cut off at the top, where it is scolloped, and marked with as many raised lines as there are on the stigma, which is persistent and scolloped on the edge.—G.

The *Papaver Rhœas* is occasionally administered to children as an anodyne, but it is retained in Pharmaceutic use more for the fine red colour which it communicates to syrup, than for any medicinal virtue it possesses. It is slightly soothing and anodyne, and is classed among those remedies called pectoral. It is used in slight catarrhal affections.* The chemical nature of the colouring matter of the petals is rather interesting. The bright red colour which they impart to water is changed to a green by the action of potass, but not by any of the other alkalies. Solutions of the red in the other alkalies or their carbonates are changed to a green by the addition of potass.

According to Smithson, the bright red colour of an infusion of the petals, in dilute muriatic acid, is changed to a deep and dull shade by the hydrate of lime. †—J. D. M.

Officinal preparations. Syrupus Papaveris Erratici, *Dub.* Syrupus Rhœados, *Lond.* Dosis, *a* ʒi. *ad* ʒiii.

References to Plate 2.

Fig. 1. the Germen with a few stamens; Fig. 2. Ripe Capsule; Fig. 3. Seeds.

* Richard, Hist. Nat. Med. ii. 627.

† Berzelius, Traité de Chimie, vi. p. 24.

PLATE 2.

Papaver Rhoeas.

W.H.Lizars sculpt.

Arum maculatum.

W.H.Lizars sculp.

ARUM MACULATUM. *Wake-Robin or Cuckoo-Pint.*

Class and Order, MONŒCIA POLYANDRIA. Nat. Order, AROIDEÆ.

GEN. CHAR. *Spathe* of one leaf, convolute at the base; *Perianth* wanting; *Spadix* with germens at the base; *Stamens* sessile near the middle of the spadix, which is naked above; *Berry* of one cell and many seeds.

Arum *maculatum;* leaves all radical, hastato-sagittate, lobes deflexed; spadix clavate, shorter than the spathe.

A. maculatum, *Linn. Sp. Pl.* p. 1370, *Fl. Brit.* p. 1024. *Engl. Bot.* 1298. *Woodville, Med. Bot.* p. 74. *Fl. Lond.* ed. 2, v. ii. *Hooker, Br. Fl.* p. 406.

ROOT perennial, tuberous, growing horizontally, and furnished with numerous single fibres, which grow from every side; leaves large, usually three or four from a root, broad-arrow shaped, on long foot-stalks, generally marked with dark purple blotches; fructification enclosed in a large spathe, the edges of which wrap over each other at the bottom, at the top closing, the middle part compressed; the spadix club-shaped, shorter than the sheath, varying in colour from a pale green to a lively purple; below surrounded by the germens, and withering before them: Stamens, filaments very short, thick, of a pale brownish yellow; anthers ovate, generally in pairs, purplish brown, two-celled; the cells obliquely horizontal, opposite, united at their upper ends; germens numerous, surrounding the base of the spadix, of an ovate roundish shape, placed beneath the stamens; stigmas oblique, beaded with little hairs; berries corresponding in number with the germens, scarlet, roundish, of one cavity; seeds two, ascending, alternately inserted into each side of the receptacle, ovato-globose.

This species, though abundant in woods, hedge-rows, and banks in England, is rare in Scotland and Ireland, and is the only species of this numerous genus that is a native of Britain; it is very conspicuous in the spring from its large shining foliage and spathe, and towards the close of summer, when the leaves are decayed, its solitary stalk supporting a cluster of brilliant scarlet berries, is peculiarly striking.—G.

From the violence of its action, the *Arum maculatum* is never employed in medicine. It acts as a drastic purgative in very small doses. Notwithstanding the disagreeable acrid taste of the fresh plant, children have been poisoned by eating it. Orfila quotes from Bulliard the following account:—

"Three woodsman's children ate of the leaves of this plant; they were seized with horrible convulsions. Assistance was procured when too late. The two youngest could not be made to swallow anything. They were bled without success; glysters were given them, but without effect. They died; the one on the twelfth, the other on the sixteenth day. The

other child, when seen, was able to swallow, but with difficulty, its tongue being so much swelled as to fill nearly the whole cavity of the mouth; but deglutition became free after blood-letting. Milk, olive oil, warm water, were given in large quantities; diarrhœa came on, which saved the child; it was pretty well restored in a short time, but remained long very lean."

Some of the species in this and other genera of the natural order possess, even in a more remarkable degree than the *Arum maculatum*, the property of causing painful swelling of the tongue. Dr Hooker mentions the case of a gardener who, from merely tasting a bit of the *Caladium Seguinum* (Dumb-Cane), was confined to the house for several days by swelling of the tongue, accompanied with excruciating pain. The juice of this last mentioned plant, as well as that of the *Arum ovatum*, is sometimes used by sugar-manufacturers to assist the granulation when the juice is too viscid. The acrimony of the Arum is entirely destroyed by heat, and though, as has been already observed, a virulent poison when fresh, it becomes not only harmless, but even nutritious when properly prepared. The inhabitants of the Isle of Portland manufacture the fecula and send it to London, where it is sold under the name of Portland Sago. Culture seems to have the power of destroying the acrimony of this genus, and one of the species, the *Arum Colocosia*, is grown as a pot herb.*

The active principle of the Arum is so volatile that the roots must be kept in well-stoppered bottles. The fresh juice is milky, and causes inflammation of the skin. Bucholz has analyzed the fresh root; he found that 100 parts contained 0.6 of fixed oil, 4.4 of an extract containing sugar, 18.0 of mucilage, 71.4 of starch.

Cypress powder is prepared from the dried root.—J. D. M.

Officinal. Radix recens, *Dub.*

* Rich. Hist. Nat. Med.

Menyanthes trifoliata

MENYANTHES TRIFOLIATA. Buckbean.

Class and Order, PENTANDRIA MONOGYNIA. Nat. Ord. GENTIANEÆ.

GEN. CHAR. *Calix* five cleft; *Corolla* monopetalous, funnel-shaped, hairy within; *Stigma* two-lobed; *Caps.* unilocular.

Menyanthes *trifoliata.*

M. trifoliata, *Lin. Sp. Pl.* 298. *Fl. Brit.* vol. i. p. 225. *Engl. Bot.* t. 495. *Fl. Lond.* ed. 2, v. 1. *Woodville, Med. Bot.* t. 2. *Hooker, Br. Fl.* p. 91. *Murray, Mat. Med.* ed. 6, p. 185.

ROOT perennial, creeping, long, jointed, and fibrous; flower stems round, simple, procumbent at the base; leaves ovate, smooth, veiny, growing three together on long foot-stalks, which form sheaths at the base, which cover the bottoms of the flower-stalks.

This elegant plant, which is the only known species, is found abundantly throughout Britain, growing in marshy places, and, though formerly held in considerable estimation as a febrifuge, has now fallen almost into disuse.—G.

The *Menyanthes trifoliata* is sometimes prescribed by medical men, in combination with other tonic or febrifuge medicines; but it is much more frequently used as a popular remedy in agues.

Richard speaks highly of its powers as a tonic, and mentions its use in scrofula and rickets. When given in large doses, purging and vomiting are excited, and even a small quantity frequently causes nausea, to prevent which aromatics ought to be combined with it. In Sweden it is sometimes used instead of hops, one part being considered equal to eight of hops. The taste of the whole plant is bitter and disagreeable. The root contains a good deal of fecula, which is used as food in some of the northern parts of Europe.*

The chemical analysis is given by Tromsdorff; 100 parts of the fresh plant, after the expression of the juice, consisted of 15.6 of vegetable fibre. The expressed juice, after being boiled, deposited 0.49. of green fecula, partly soluble in alcohol, the insoluble portion being vegetable albumen. On evaporation 3.92 of extract were obtained, which, after being deprived of gum and inuline by alcohol, gave 1.2 of a brown extract, consisting of a bitter principle, animalized matter, acetate of potash, and oxalic acid. The bitter principle is not thrown down by infusion of galls.†

It appears to me highly probable that the bitter principle is gentianine, and that the purgative and emetic effects are owing to some of the other constituent parts.—J. D. M.

Officinal. Folia.

Dosis, *a* ℈ss. *ad* ʒiss. Foliorum exsiccatorum.

References to Plate 4.

Fig. 1, Calix; Fig. 2, Flower laid open; Fig. 3, 4, Seed-vessel.

* Dictionnaire des Drogues, v. 263.

† Bulletin de Pharm. iv. 94.

PLATE 4.

DATURA Stramonium. Thorn-Apple.

Class and Order, Pentandria Monogynia. Nat. Ord. Solaneæ.

Gen. Char. *Calix* tubular, deciduous; *Corolla* funnel-shaped, plaited; *Capsule* with four valves.

Datura *Stramonium*; Leaves ovate, angularly sinuated, smooth; Capsule erect, ovate, clothed with numerous spines.

D. *Stramonium, Lin. Sp. Pl.* p. 255. *Fl. Brit.* v. i. p. 253. *Engl. Bot.* p. 1288. *Woodville, Med. Bot.* v. ii. p. 238, tab. 124. *Fl. Lond.* ed. 2. v. i. *Hooker, Br. Fl.* p. 93.

Root annual, branched; stems from one to four feet in height, or even more, round, smooth, much branched, and spreading; leaves arising from the forking of the stalks and branches, solitary, varying in size, smooth, of a deep-green above, pale beneath, unequally sinuated and toothed, and extending further down the foot-stalk on one side than on the other; flowers single, upright, arising with the leaves from the branching of the stalks, white, funnel-shaped.

The Thorn-apple is often to be met with on dunghills and among rubbish in the vicinity of large towns. It probably is not originally indigenous to Great Britain, but having been cultivated since the days of Gerard in 1613, is now considered a native of easy cultivation, growing readily in most soils, and producing a large quantity of seed.

The student will have no difficulty in distinguishing this plant, as we have no other that bears even a distant resemblance to it. Its smell is peculiar, and it possesses powerful and very active properties. Of late years Datura has become of considerable interest as a remedy for alleviating the paroxyms of asthma, by smoking it through a tobacco-pipe, a practice imported from the East Indies, where, however, it is not the present species that is used; but the whole genus appears to be possessed of nearly the same properties. That relief may be obtained in certain cases from inhaling the fumes of this plant is without doubt; but that its fumes act differently on different individuals is equally certain. I have found that inhaling the smoke for the space of one minute and a-half, occasioned retching to an uncommon degree, but with this peculiarity, that it was unaccompanied by the straining or exertion usually attendant on vomiting.—G.

Every part of the thorn-apple, but more especially the seeds, is poisonous; under proper management, however, it becomes a valuable remedy in many diseases. Mania, melancholy, convulsive diseases, such as epilepsy, neuralgic affections, * chronic rheumatism, are among the number. In the two last diseases both the external and internal use of the

* M. Barbier. Traité de Matière Medicale, iii. 415. Bulletin des Sciences Medicales.

PLATE 5.

Datura Stramonium.

W.H.Lizars sculpt

remedy is recommended. In hæmorrhoids much benefit has been derived from its application in the form of ointment. Baron Stoerk was the first who used this plant in mania; several Swedish physicians followed his example, and with occasional success. Like the Belladonna, it must be used with caution, both from the violent nature of its effects, and from the uncertain strength of its preparations.* The effects produced by a poisonous dose vary with the temperaments of individuals; in general, a kind of intoxication is created, with an inclination to dance, jump, sing, or laugh, (the laugh often sardonic,) then convulsions or paralysis of the limbs, ending in delirium, and that in coma, which may terminate fatally. Paralysis is another affection caused by an over-dose. Sometimes no other symptoms than the intoxication and inclination to muscular motion show themselves, and a sound deep sleep, leaving the person weak and languid, terminates the unpleasant effects.

Owing to the disagreeable and acrid taste of the plant, few accidental cases of poisoning are likely to occur, but there are several on record. Dr Christison mentions, that all recent cases in this country have been accidental,† but that in Germany it has been used for the purpose of causing stupefaction, to conceal robbery or some other crime. In India, the *Datura ferox* is used for this purpose. M. Orfila gives the results of experiments on dogs; from which he concludes that it acts more directly on the brain than Belladonna.‡ In man it certainly seems to do so—the delirium which it causes being of a more extravagant nature, and paroxysms of violent madness being not unfrequent.

Richard§ remarks, that neither this nor the *Atropa* ought to be used when opium can be employed; they are only to be given where opium is contraindicated by some idiosyncrasy, or when it has failed from any other cause. In poisoning by the Stramonium, blood-letting is indicated by the violent determination to the head, and by the circumstance, that after death, the vessels of the brain are generally found turgid. Alkalies, their carbonates, or solution of soap in water, ought to be given if vomiting cannot be caused by emetics. Vinegar is generally recommended as an antidote in cases of vegetable poisoning, but ought never to be exhibited till the stomach be cleared of the poison:—when coma has supervened, perhaps the cold douche might be employed with good effect.

An alkaloid is said to have been found by M. Brandes, but other chemists have not been successful in isolating it. Nearly the same processes have been tried as are mentioned, under the article *Atropa Belladonna*. Berzelius mentions that Lindbergson has analyzed the seeds, and has been unable to procure a crystallizable alkaloid. He procured the active principle in the form of a reddish-brown, extractiform and deliquescent mass, which caused dilatation of the pupil as powerfully as *Belladonna*. Lindbergson also remarked, that the narcotic properties were much injured, and even destroyed, by heat.‖

* The rule which has already been given under the head of *Digitalis*, for regulating the dose, when fresh parcels of the medicine are commenced, applies to this, and all active vegetable preparations, obtained by drying the leaves, or by the formation of extracts.—(J. D. M.)

† Christison on Poisons, p. 727.

‡ Toxicologie Generale, ii.

§ Histoire Naturelle Medicale, ii 109.

‖ Berzelius, Traité de Chimie, vi. 320.

The Empyreumatic oil of Stramonium is procured by the same process, as has been already mentioned under the head of Digitalis; it possesses properties even more highly deleterious than the oil of that plant, and contains like it a poisonous principle soluble in water, and the acids, and capable of acting with great energy when combined with the latter; alkalies do not destroy its poisonous properties but impair them to a considerable extent. I have examined the empyreumatic oils of *Conium Maculatum*, *Hyosciamus niger*, *Nicotiana tabacum*, *Opium*, *Lactucarium*, and several other narcotics and narcotico-acrids, and have found them to contain deleterious principles, possessing the property of being soluble in water and dilute acids, and of forming in some instances crystallizable compounds. I shall take notice of each of these under their respective heads; but as the nature and limits of this work will not admit of full details, I am at present engaged in preparing for publication a separate account, which will contain a full detail of the chemical and toxicological characters of each.

Exp. 1. At eleven minutes before two P. M. six drachms of an acid solution prepared from ten grains of the Empyreumatic oil of Stramonium were given, per anum, to a rabbit; in two minutes the animal was obviously affected; in five and a half it fell on its side, and could not rise, although it made violent and repeated efforts to do so; at the expiration of thirteen minutes it was seized with convulsive stretching and severe tremors of the limbs, accompanied with reflection of the head, in fifteen with violent convulsions, succeeded by laborious breathing and total insensibility. It died at eight minutes and a half past two, being nineteen minutes and a half after the injection of the poison. On opening the thorax, the heart was found beating at the rate of 80 in the minute, and continued to contract for seventeen minutes.

Exp. 2. The oil, from which the solution was prepared, was given to another rabbit, and caused vertigo, but no permanent injury, as the animal was quite well next day, and has continued so ever since.

From these experiments I would conclude that the poison of Stramonium is more directly exciting than that of Digitalis.—J. D. M.

Officinal. Herba et Semina, *Dub. Lond.* Herba, *Edin.*
Officinal preparation. Extractum, *Lond. Dub.*
Dosis, *a* gr. ss. *ad* gr. iij. extracti.

References to Plate 5.

Fig. 1, A portion of the Corolla laid open, showing the insertion of the stamens; Fig. 2, Germen and Pistil; Fig. 3, Transverse section of the Capsule.

Atropa Belladonna

ATROPA Belladonna. Deadly Nightshade.

Class and Order, Pentandria Monogynia. Nat. Ord. Solaneæ.

Gen. Char. *Corolla* campanulate; *Stamens* distant; *Berry* with two cavities.

Atropa *Belladonna;* stem herbaceous; leaves ovate, entire.

A. Belladonna, *Linn. Sp. Pl.* p. 268. *Fl. Brit.* vol. i. p. 255. *Engl. Bot.* t. 592. *Fl. Lond.* ed. 2 v. i. *Woodville, Med. Bot.* t. 1. *Hooker, Br. Flora,* p. 94.

Root perennial, thick, branched, and creeping; stalks several, three or more feet high, upright, rounded; leaves entire, in pairs of unequal sizes; flowers on solitary foot-stalks, drooping, of a livid purple colour; berries at first green, becoming of an intense purple or black when ripe; seeds numerous, brown, irregular in shape, acquiring their brown hue before the berries turn black.

This plant is extensively dispersed through Great Britain, growing in various soils and situations, but appears to abound most in chalky districts; it increases rapidly by its roots and seeds, but, from some circumstance, is found frequently, after flowering, to have the root quite perished before any appearance of decay is observable in the leaves and stems.

The genus Atropa is small, and all the species are said to possess deleterious qualities: the British species is one of the most powerfully narcotic among our native plants; its unpleasant effects being communicated, both by touch and taste, frequently causing paralysis of the hands from the mere gathering or holding of the plant, and it is this property that constitutes its principal value for medical purposes.—G.

Of all the indigenous poisonous plants with which we are acquainted, not one, perhaps, comes so frequently under the notice of the practitioner as the *Atropa Belladonna.* From the tempting appearance of the berries they are often eaten, and as there is nothing nauseous or alarming in the taste, enough are generally taken to produce pretty violent effects. The symptoms of poisoning with Atropa are, dryness and burning heat of the throat and mouth, vertigo, dimness and confusion of sight; dilatation and immobility of pupil; delirium, coma, an eruption resembling that in scarlatina, and occasionally strangury. In Orfila's work on poisons several cases are detailed, of which perhaps the most remarkable is that given by M. E. Gualtier de Glaubry. Of the 150 soldiers who, as he relates, were poisoned by it near Dresden, the greater number were delirious, but the delirium was gay; a great number also lost their voice, and others spoke confusedly; there was also much motion of the hands and fingers; several were blind for some time; and in all, the pupils were dilated.*

In Dr Christison's work on poisons, many interesting cases are given, with references to the works containing the full details.†

* Journal de Sedillot, Decembre 1813, p. 84.

† Christison on Poisons, p. 720, 724.

PLATE 6.

According to M. Orfila's experiments, dogs seem not to be so easily affected by Belladonna as man is; thirty grains of well-prepared extract, dissolved in water, and injected into the jugular vein of a small robust dog, having only caused a few hours drowsiness and vertigo, after which the animal recovered.

As the stomach becomes nearly insensible to the action of emetics when a considerable quantity of this poison has been swallowed, perhaps the best means of obviating the evil consequences is the exhibition of an alkaline solution, or a strong solution of soap, if the stomach-pump, which is preferable in the first instance to all other means, cannot be procured. Diffusible stimuli ought to be administered, and cold effusion frequently had recourse to; blood-letting also or blistering, if the head symptoms run high, are advisable. Emollient drinks, such as lint-seed tea, thin gum water, sweet milk, &c. are also useful in diminishing irritation.

Belladonna is used as an anodyne, both internally and externally; it has been lately much used in some parts of the continent for the cure of hooping-cough. The cough and other symptoms are said to yield rapidly to its use, but the constitutional excitement caused by the remedy must be continued for some time before a permanent cure can be expected. Amongst the number of its advocates in this disease are Wetzler, Meylin, Hufeland.* The greatest caution is requisite in using so violent a remedy where the patients are generally young; the dose is from a quarter to half a grain of the powdered leaves; very gradually increased. Dr M. De Bamberg remarks, that it is principally useful in the primary stage, when there is more or less irritation of the respiratory organs. From the circumstance of Belladonna simulating in its effects some of the symptoms of Scarlatina, Dr Hahnemann (author of the homoeopathic system), has introduced it as a preventive when that disease is epidemic; he supposes it to act in the same manner as the vaccine matter does, in preventing the contagion of small-pox, or in modifying the disease when communicated. Many other German physicians corroborate the opinion of Dr Hahnemann.† In Toxicological Systems, this plant is referred to the narcotico-acrid section, though the irritating effects are much less obvious than the narcotic; in therapeutic arrangements it is classed under the narcotic.

Brandes has given a very detailed and complete analysis, the results of which are, wax, 0.7, chlorophylle, 5.84; an animalized matter insoluble in alcohol, (to which he has given the name of Pseudotoxine,) 16.05; an animalized substance soluble in alcohol, (Phytomacolle), 6.90; gum, 8.33; starch, 1.25, vegetable albumen, 10.7; vegetable fibre, 13.90; salts, 7.47; water, 25; soap, 205. He has also discovered a vegetable alkali, to which he has given the name of Atropia; it is procured by acidulating the juice with sulphuric acid, then filtering and supersaturating the liquid with caustic potass. By this process a number of small white brilliant scales are thrown down; these are Atropia. It is said to have a distinct alkaline reaction, and a saturating power superior to any of the other vegetable alkalies, 107 parts of the alkali being sufficient to neutralize 100 of sulphuric acid; its salts contain a large proportion of water of crystallization. Berzelius says, that no other chemist has been able to obtain this alkali, and therefore he considers its existence problematical.‡

* Richard, Hist. Nat. Med. ii. 89.

† Archives, Gen. de Medicine, V. v. p. 264.

‡ Traité de Chimie, vi. 271.

The active principle, according to Vauquelin, is an animalized matter soluble in alcohol; it is obtained by exhausting the watery extracts with alcohol; and is deliquescent, owing to the presence of acetate of potass.

Brandes has more lately discovered that the poisonous principle is volatile; he distilled the dried leaves with water and hydrate of lime, and to the distilled liquid he added muriatic acid; this he evaporated to dryness, then dissolved in alcohol, and evaporated to the consistence of extract; this was mixed with caustic potass and distilled; the distilled liquid was alkaline, of a strong odour, and was poisonous.

Runge obtained a crystalline substance by mixing hydrate of magnesia with a strong decoction of the leaves and root of the plant, by evaporating to dryness and treating with boiling alcohol of 8.17, which deposits the Atropine on cooling. It possesses the characteristic property of causing dilatation of the pupil, and exerts a feeble alkaline reaction. *

By Tilloy another process has been given. He acted on the watery extract with alcohol, evaporated the alcoholic solution, exhausted it with water, precipitated the aqueous solution by magnesia, dissolved the precipitate in ether, evaporated and united with an acid, and reprecipitated by an alkali. In this form Atropine forms neutral salts with acid, but does not crystallize.

Rangue and Limousin have procured this alkaloid by a process somewhat similar to Tilloy's, only they used ether instead of alcohol in the first stage, and employed subacetate of lead before the magnesia in the latter. †—J. D. M.

Officinal. Folia, *Lond. Edin.* Radix et Folia, *Dub.*
Officinal preparations, Succus spissatus, *Edin.* Extractum Belladonnæ, *Lond.*
Dosis, *a* gr. ss. *ad* gr. iv. Fol. Exsicc. et *a* gr. ss. *ad* gr. iij. extracti.

Reference to Plate 6.

Fig. 1, Calix; Fig. 2, Flower laid open; Fig, 3, Berry; Fig 4, Transverse Section of a Berry; Fig. 5, Seeds.

* Berzelius, Traité de Chimie, V. vi. 271. Annales de Chimie et de Physique, xxvii. 32.
† Berzelius, Traité de Chimie, vi. 276.

SOLANUM Dulcamara. Woody Nightshade, or Bitter-sweet.

Class and Order, Pentandria Monogynia. Nat. Ord. Solaneæ.

Gen. Char. *Calix* of from five to ten segments; *Corolla* rotate; *Anthers* opening, with two pores at the upper extremity; *Berry* roundish, of two or more cavities.

S. *Dulcamara;* stems without thorns, shrubby, climbing; upper leaves hastate, lower ones cordate; racemes drooping, inserted opposite the leaves.

S. Dulcamara, *Lin. Sp. Pl.* p. 264. *Fl. Brit.* v. i. p. 265. *Engl. Bot.* t. 565. *Woodville, Med. Bot.* 33. *Fl. Lond.* ed. 2. v. ii. *Hooker, Br. Fl.* p. 94.

Root perennial, somewhat creeping; stalk woody, climbing to the height of six feet or more, thinly beset with small-pointed tubercles; leaves on foot-stalks, of an oval pointed shape, extending slightly down the stalks, the lower ones entire, the upper ones lobed or halbert-shaped; flowers on branched cymes; the proper peduncles of the flowers, bulbous at their base, or growing out of a kind of socket; corolla monopetalous, wheel-shaped, the segments turning back; at the bottom of each segment are two roundish green spots, Fig. 3.

The woody nightshade, or, as more commonly called, Dulcamara, was formerly held in considerable repute for medicinal purposes, but at this time has fallen into almost total disuse, though its name is still retained in the modern pharmacopœias. From its berries bearing some resemblance to those of currants, they are often eaten by children, but if speedily removed from the stomach, there is little cause for apprehension.

The natural family of Solaneæ is numerous, and the known species of the present genus amount to perhaps upwards of seventy, yet the whole must be viewed with suspicion, as, though a few species among them afford valuable articles of food, they are all more or less possessed of active poisonous properties, and they are only to be used as food after undergoing some culinary process, by which their noxious qualities are destroyed.

Solanum Dulcamara and *nigrum* are the only kinds natives of Great Britain, and in this country are held as troublesome weeds, whilst in some other countries the most poisonous of these (*S. nigrum*) is in common use for culinary purposes. The *Solanum tuberosum*, which produces the Potatoe root, is in its wild and uncultivated state not fit for human food; and it is only after a long progress of cultivation that its deleterious qualties are ameliorated. In a raw state it cannot be used as food, but when submitted to the action of heat, it forms a large portion of the food of the peasantry of this and other countries. This useful root abounds in fecula, which is, under peculiar circumstances, entirely converted into a hard gum-like substance; I have a specimen now before me in this state, which has the whole of its interior substance completely charged, whilst the rind retains its usual appearance.—G.

The same difference of opinion exists with regard to the poisonous effect of this as of

W.H. Lizars sculp.t

the *S. nigrum.* Dunal denies it all activity as a poison; but several authors relate cases in which some deleterious effects have been observed. Dr Duncan mentions the following case:—

" A young man affected with a cutaneous complaint had taken the decoction of a handful of the fresh twigs daily for fourteen days without any effect. On the fifteenth, having also taken an ounce of the extract in solution, he was seized with cramps in the calves of his legs, slept during the whole night, but on awaking next morning found his head vacant, vertiginous, *muscæ volitantes;* pupils greatly dilated; cramp of the legs and arms; inability to speak, with stiff swelled tongue; pulse slow and intermitting; cold sweat, and trembling of the limbs. These symptoms soon went off after the administration of a solution of sub-carbonate of potass."*

This and another case, where a young man became narcotized, † and either slept or felt great inclination to do so, for ten hours after merely carrying a bunch of the fresh plant in his hat, (cacuphe) would seem at least to prove that in some constitutions, or under peculiar circumstances, it is not by any means inert. In medicine it is used in scrofula, gout, and chronic rheumatism, in syphilis after the use of mercury, and in cutaneous diseases. It acts as a sudorific and diuretic. The taste is indicated by the specific name; it is first bitter and then sweet. Previous to the discovery of Solanine, Pfaff found in the Dulcamara a principle having the peculiar bitter sweet taste of the plant;—to this he gave the name of *Picroglycion;* more lately, Biltz has obtained this in a crystalline form; it has the characteristic taste; is not altered by exposure to the air; is soluble in water, alcohol, acetic ether, and slightly so in common ether; and is neither precipitated from its solutions by the metallic salts nor by infusion of galls. ‡

Desfosses discovered Solanine in this at the same time as in the *S. nigrum.* §—J. D. M.

Officinal. Caules, *Lond. Edin.* Stipites, *Dub.*
Officinal Preparations. Decoctum Dulcamaræ, *Lond.*
Dosis, *ab* ℥ii. *ad* ℥iv. ter indies.

References to Plate 7.

Fig. 1, Calix; Fig. 2, Corolla; Fig. 3, a Petal, showing the two glands at its base; Figs. 4, 5, Antlers; Fig. 6, a Berry; Fig. 7, Transverse section of the Berry; Figs. 8, 9, Seeds; Figs. 10, 11, Embryo; Figs. 1 to 6, and 8, natural size; Figs. 7, 9, 10, 11, magnified.

* Duncan's Supplement, 102.
† Dictionnaire des Drogues, ii.
‡ Berzelius, Traité de Chimie, vi. 245.
§ Journal de Pharmacie, V. vi. p. 49.

SOLANUM NIGRUM. *Garden Nightshade.*

Class, Order, Natural Order, and Generic Character, see S. DULCAMARA, Pl. 7.

Solanum *nigrum;* stems without thorns; leaves ovate, bluntly toothed; umbels lateral, drooping.

S. nigrum, *Lin. Sp. Pl.* p. 266. *Fl. Brit.* v. i. p. 256. *Engl. Bot.* t. 566. *Flora Lond.* ed. 2, v. ii. *Hooker, Br. Fl.* p. 94.

ROOT annual, branched; stalk one to two feet high, much branched, somewhat angular, from the leaves being decurrent, roughish, a little swollen at the joints; branches alternate; leaves on long foot-stalks, alternate, extending down the stalks, of an oval-pointed form, angularly indented, furnished with a short soft pubescence; flowers growing in a kind of *umbel;* foot-stalks of the flowers spreading, arising from the middle of the stems, between the joints; calix of five ovate segments, which are persistent, and when the fruit is ripe, become black with the berries; corolla wheel-shaped, white, the segments oval and pointed; stamens, five very short hairy filaments; anthers oblong, yellow, somewhat united; pistil, germen roundish and green; style tapering, green, the lower part villous; stigma roundish; seed-vessel a round berry, at first green, when ripe becoming of a deep shining black, with two cavities; seeds several, kidney-shaped, and yellowish.

The *Solanum nigrum*, though scarcely a native of Scotland, is of the most common occurrence in England, and particularly so in the vicinity of London and other large towns. It abounds in neglected gardens, and amongst rubbish, blooming from May to September, and producing its ripe berries about a month after flowering.—G.

The properties of the *Solanum nigrum* have been the cause of much difference of opinion among toxicologists; some asserting it to be a deadly poison, and others holding it nearly harmless. Orfila * details several experiments on dogs, in which death, preceded for some time by immobility and insensibility, took place between forty-seven and forty-eight hours after the administration of seven drachms of the watery extract, and forty-six hours after the application of two drachms to the cellular tissue. M. Bourgogne says it is extremely poisonous to sheep, and causes death by its acrid, as well as narcotic effects. † In direct opposition to this, we have the experiments of M. Dunal, who not only gave the ripe berries to animals, but ate them himself without observing any bad effects, or suffering any inconvenience. ‡ The leaves are used in great quantity as food in the isles of France and Bourbon, and in the Antilles, and are prepared like spinage. §

* Toxicol. Gen. ii. 189.

† Journ. de Chim. Med. Nov. 1827.

‡ Richard, Histoire Naturelle Medicale, ii. 95.

§ Histoire Naturelle Medicale et Economique des Solanum, Paris, 1813, p. 70.

Several cases of poisoning, attributed to the berries of this plant, are mentioned; but, as the *Atropa Belladonna* has the same vulgar name as the Solanum, both in France and here, (Fr. *Morelle*, Eng. Nightshade,) it is more than probable, that the injurious effects ought to be referred to the former plant. Till, however, there is less discrepancy of opinion on the subject, it will be at least safest to regard it with suspicion.

Solanine was discovered in 1821 by M. Desfosses in the *S. nigrum* and *Dulcamara*;* by Morin it was found in *S. Mammosum*;† by Pelletier and Payen in the berries of the *Verbascifolium*, an American plant. The last-mentioned chemists obtained it in a crystalline form, while the substances procured by Desfosses were pulverulent.‡ It is described as crystalline, white, inodorous, of a somewhat bitter taste, soluble in alcohol, slightly so in ether, and in the fixed and volatile oils; insoluble in water, and forming crystallizable salts with the acids; it is not used in medicine. Orfila says, that it is more emetic in its properties than opium, and not so soothing.§

Berzelius mentions, with some expression of doubt, its existence in the *S. tuberosum* as discovered by Baup.‖—(J. D. M.)

* Orfila, Elemens de Chimie, ii. 254.

† Journal de Chimie Medicale, V. i. p. 85.

‡ Journal de Chimie Medicale, i. 517.

§ Elemens de Chimie, ii. 255.

‖ Traité de Chimie, vi. 211.

LEONTODON TARAXACUM. Dandelion.

Class and Order, SYNGENESIA ÆQUALIS. Nat. Ord. COMPOSITÆ.

GEN. CHAR. *Involucre* imbricated with scales, the outermost frequently reflexed; *Receptacle* naked; *Pappus* stipitate, simple.

Leontodon *Taraxacum;* outer scales of the involucre reflexed, leaves runcinate, glabrous, toothed.

L. Taraxacum, *Lin. Sp. Pl.* 1122. *Woodville, Med. Bot.* i. *tab.* iii. *Fl. Brit.* 822. *Eng. Bot.* t. 510. *Fl. Lond.* ed. 2. v. i. *Hooker, Br. Flora,* p. 340.

ROOT perennial, milky, penetrating to a considerable depth; leaves more or less deeply jagged or toothed, each tooth pointed and sharply indented; stalks naked, hollow, each supporting one flower; the common or general calix smooth; the lowermost leaves or *squamæ* turning back; flower large and shewy; seed a little crooked, flattish and somewhat four-cornered, grooved, at the top prickly; down or pappus standing on a footstalk, simple; receptacle naked, full of holes.

A most abundant species, common to fields, hedge banks, and uncultivated places, flowering in May and continuing the whole summer. Its parts of fructification being conspicuous, it offers to the young botanist a good example of the structure of compound flowers.—G.

Both in this country and in Germany, the *Leontodon Taraxacum* has been in vogue as a tonic and alterative; in France, it is much used in chronic diseases of the skin and in visceral obstructions; the dose given is from two to three ounces of the expressed juice.

Richard remarks that it is one of those remedies which insensibly alter the state of the system.* I have seen it used with good effect (in combination with the Dulcamara) instead of sarsaparilla.

The young leaves are eaten as salad, but when mature, their bitterness is too intense to allow of their being used in this way.

The root, flower-stems, and leaves abound with a milky juice, which has the property of causing a permanent dark-coloured stain on the skin and on linen. John has found that caoutchouc, resin, gum, bitter extractive, sugar, a free acid, and salts of lime and potass are contained in the fresh juice. Inuline has been procured from the fresh root by Waltt in the proportion of half an ounce from a pound.*—J. D. M.

Officinal. Radix et Folia, *Lond. Edin. Dub.*
Officinal preparation. Extractum Taraxaci, *Lond. Dub.*
Dosis, *a* ℈ss. *ad* ʒss. Extracti.

* Histoire Naturelle Medicale, ii. 256. † Berzelius, Traité de Chimie, vi. 198.

PLATE 9.

Leontodon Taraxacum

LINUM usitatissimum. Common Flax.

Class and Order, Pentandria Pentagynia. Nat. Ord. Lineæ.

Gen. Char. *Calix* of five persistent leaves; *Petals* five; *Capsule* globose, mucronate, with ten valves, and ten cells; *Seeds* ovate, compressed.

Section I. Leaves alternate.

Linum *usitatissimum;* leaves lanceolate; calicine leaves ovate, acute, three-nerved; petals crenate; stems nearly solitary.

L. usitatissimum, *Lin. Sp. Pl.* 397. *Fl. Brit.* 342. *Engl. Bot.* 1357. *Woodville, Med. Bot.* v. ii. p. 303. *Fl. Lond.* ed. 2, v. iii. *Hooker, Br. Fl.* 147.

Root annual, fibrous; stalks upright, a foot or two high or more, round, smooth, leafy, branching only at the top; leaves lanceolate, sessile, at the lower part of the stem growing thickly together, without any order, on the upper part of the stem more distant and alternate; flowers large, of a delicate purplish blue colour; petals five, wedge-shaped, deciduous, streaked with veins of a deeper colour, the tips notched as if eaten by insects, the claws white.

Flax, though enumerated among our indigenous plants, is but a doubtful native, yet, from the length of time it has been cultivated, its seeds have become disseminated, and it is generally esteemed an aborigine. It is a hardy annual of considerable beauty, and is cultivated in most countries of Europe for the fibres afforded by its stems, known by the common appellation of flax or lint; as also for its seeds. Their uses in domestic economy and the arts are numerous.—G.

In addition to its extensive use in the arts, the *Linum usitatissimum* is employed in medicine in several forms. The infusion of the seed is one of our most useful mucilaginous drinks, and is employed in inflammatory diseases, in diarrhœa, and in all irritations of the alimentary canal; from the diuretic property which the infusion possesses, it is also used in diseases of the bladder and in strangury arising from any accidental circumstances; in chronic diarrhœa, much relief is often afforded by an injection, composed of the infusion combined with laudanum. In surgical practice, the farinaceous part of the seeds, under the name of lintseed meal, is very generally used for making poultices, and in combination with the decoction of poppies, as a sedative poultice to irritable or cancerous sores. The oil is also employed as an external application in burns, and when formed into a liniment with lime-water forms the well known Carron Oil.

Lintseed oil is seldom used internally, as there are so many much less nauseous fixed oils in common use. As an injection in ileus, and spasmodic contractions of the intestines,

it is occasionally used. In poisoning with acrid substances, and especially with the alkalies, this, or any other bland fixed oil, is very useful.

According to the analysis of Leo Mayer, the seeds contain 11.265, of fixed oil, 0.146 of wax, 2.488 of soft resin, 0.550 of resinous colouring matter, 0.926 of a yellow matter analogous to tannin, 1.48 of amidine, 6.154 of gum, 15.12 of vegetable mucilage, 2.931 of gluten, 2.782 of albumen, 10.884 of sweet extractive, 44.382 of husks containing mucilage. * To procure the oil, the seeds are first roasted to deprive them of as much mucilage as possible; they are then moistened with hot water and subjected to pressure; the oil thus obtained is of a greenish yellow colour, and usually of a rancid disagreeable taste. The cake which remains after the expression of the oil, is called Oil-Cake, and is used for fattening cattle. Lintseed oil when exposed to the air, absorbs oxygen, and becomes dry and almost resinous in appearance; from this property it is called a drying oil. The combination between the oxygen and the oil is occasionally so rapid, as to cause a rise of temperature sufficient to set fire to dry vegetable substances; hence have arisen several destructive fires in cotton manufactories and in flax and cordage stores. With litharge, this oil enters into chemical union, and acquires the property of drying in a remarkable degree; in this state it is used by painters.

Printers also use it for making printing ink; they prepare it by boiling, inflaming, and allowing it to burn till it has acquired the proper consistence.—J. D. M.

Officinal. Semina.

Officinal preparations. Infusum, *Lond. Edin. Dub.* Oleum, *Lond. Edin. Dub.* Oleum Lini c. Calce, sive Linimentum Calcis, *Edin. Dub.*

Dosis, *a* lb. j. *ad* lb. iv. Infusi indies.

Note.—The London, Edinburgh, and Dublin Colleges, order the oil to be prepared by simple expression, without heat.—J. D. M.

* Berzelius, Traité de Chimie, vi. 332.

L. catharticum.

Linum usitatissimum

LINUM CATHARTICUM. *Purging Flax.*

Class and Order, Natural Order, and Generic Character. See *L. usitatissimum.* Pl. 10.

SECTION II.—Leaves opposite.

Linum *catharticum ;* leaves opposite, oblong; stem dichotomous; petals acute.

L. catharticum, *Lin. Sp. Pl.* p. 401. *Fl. Brit.* p. 344. *Engl. Bot.* 382. *Fl. Lond.* ed. 2. v. i. *Hooker's Br. Flora, p.* 148.

ROOT annual and fibrous; stalks from three inches to a foot or more high, upright, smooth, round, and branched at the top; leaves opposite, nearly upright, smooth, perfectly entire, on the upper parts of the branches alternate and lanceolate; flowers white, before expanding drooping; petals white, spreading, pointed, slightly united at the base, having three ribs and yellow claws.

This small but elegant species of flax, is dispersed over Great Britain. It abounds on chalky and hilly districts, also amongst sand on the sea shore; in the last situation, we have found it attaining a larger size than we have ever seen it under any other circumstances,—having gathered it on the shores of the Frith of Forth nearly two feet high. It is sometimes found growing in meadows; flowers from June to August, and ripens its seed about a month or five weeks after blooming; and as it continues a long time in flower, it often happens that unopen buds, fully expanded blossoms, and ripe capsules, are at the same time met with on the same plant.—G.

Though retained in our Pharmacopœias, the *Linum catharticum* is rarely used in regular practice; it is possessed, however, of strongly marked purgative properties, and forms an exception to the character for blandness, for which the natural family of the *Lineæ* is distinguished. Another species, the *L. selaginoides*, is said to be bitter and aperient. * The usual mode in which the *L. catharticum* is exhibited, is by infusing a handful of the fresh herb in whey, and drinking the infusion while warm. The country people consider this as useful as many of our more costly medicines.—J. D. M.

References to Plate 11.

Fig. 1, Calix; Fig. 2, Petal; Fig. 3, Stamens and Pistils; Fig. 4, Pistils with the Stamens removed; Fig. 5, a Capsule; Fig. 6, Seeds.

* Lindley, Introd. to Nat. System of Botany, p. 156.

PLATE 11.

DAPHNE Mezereum. Mezereon or Spurge Laurel.

Class and Order, Octandria Monogynia. Nat. Ord. Thymeleæ.

Gen. Char. *Perianth* single, inferior, like a corolla, quadripartite. *Berry* with one seed.

Daphne *Mezereum ;* flowers subternate, lateral, sessile, appearing before the leaves, tube of the *perianth* hairy. *Hooker.*

D. Mezereum, *Lin. Sp. Pl.* 509. *Fl. Brit.* 420. *Engl. Bot.* 1381. *Woodville, Med. Bot.* 23.

The Mezereon forms a low bushy shrub, and is to be found in most gardens, where it is cultivated for its early blossoming and the delightful fragrance of its flowers : it has been admitted into the British Flora, though it can scarcely be considered a native ; the few situations in which it has been found growing apparently wild, would induce a belief that it had by some means escaped from gardens. I feel confirmed in this opinion from having found it within a few miles of Edinburgh in the spring of 1832, growing on a rock at a considerable elevation : on climbing to the spot I found a considerable number of the seeds and half-digested berries, also some young seedlings of perhaps a year old, and subsequently noticed the berries to be eaten by blackbirds and thrushes, which may account for the seeds being found in the above named situation, which was much resorted to by various species of thrush.

This is the only British genus belonging to the natural family of Thymeleæ, and our native species are possessed of the peculiar acrid properties common to the order ; *D. Laureola* is equally acrid with *D. Mezereum,* and the berries are stated by De Candolle to be poisonous to all animals excepting birds ; the berries of the Mezereon are extremely acrid, and have frequently proved highly injurious, though eaten in but very small quantities.

The flowers grow in thick clusters and near the extremities of the branches, appearing before the expansion of the leaves, and are succeeded by their bright scarlet fruit, which arrives at maturity in the summer months.—G.

The natural family of the Thymeleæ, to which the *Mezereon* belongs, are remarkable for the extreme acridity of their bark and roots. For this reason, the various species are not much used in medicine ; the *D. Mezereum* is the only one mentioned in our pharmacopœias, and its use is much circumscribed, the sequela of syphilis and scrofula being the only cases in which it is employed. Its action is sudorific and alterative, but it is seldom given alone ; in combination with Sarsaparilla, Sassafras, Guaiac and Liquorice, it forms the *Decoctum Sarsaparilla Compositum,* a preparation resembling the celebrated Lisbon Diet Drink, and very useful in the sequela of syphilis, either after, or along with, a

Daphne Mezereon.

W.H. Lizars sculp.t

mercurial course; whether this preparation owes much of its efficacy to the Mezereon is to be doubted.

In France the *Daphne gnidium* or *Garou*, is used instead of the Mezereon. The external application of this species as an epispastic, is recommended by some in cases where cantharides is inadmissible, and a formula for a preparation of an ointment, *(Pommade du Garou)* is given; 4 parts of the root bruised and moistened, are to be boiled in a mixture of 10 parts of hog's lard, with 2 of wax, till all the moisture be dissipated. * Instead of this ointment, the French apothecaries sell another under the same name, of which cantharides is the active ingredient, but prepared in such a manner as seldom to give rise to any unpleasant symptoms. †

From Orfila's experiments with *D. gnidium* on dogs, it appears to cause death in a few hours, by exciting violent inflammation of the stomach and intestines, with great general irritation; when applied to a wound, death seemed to be caused by the irritation, and not by absorption. ‡ In Dr Christison's work on Poisons, mention is made of several fatal cases, and he remarks that children, tempted by the beauty of the ripe berries, have eaten them, and have died in consequence. §

Richard remarks, that it was in analyzing the bark of the *D. alpina*, that Vauquelin indicated the existence of the first organic alkali; ‖ but this surely is a mistake, as Vauquelin did not discover Daphnine till 1808, ¶ and Dr Duncan had rendered the existence of Cinchonia probable, and Serturner had discovered Morphia in 1803. Vauquelin has since corrected his analysis, and has found that Daphnine, which he considered an alkali, is of a resinous nature.

Berzelius gives a full detail of the analysis of the Mezereon by C. G. Gmelin and Bär. According to them, the bark contains wax, acrid resin, a crystalline principle (Daphnine), a yellow colouring matter, sugar, gum, a reddish brown extractive matter, free malic acid, and a variety of salts; the alcoholic tincture, after being distilled to the consistence of extract, separates, on the addition of water, into two portions, a dark green insoluble resin, and a clear yellow solution. The resin is extremely acrid, and consists of two substances, viz. an acrid oil and a solid matter; Berzelius remarks, that these ought to be more carefully examined. From the clear yellow liquid, the Daphnine is obtained by precipitation with acetate of lead, and subsequent evaporation, after the excess of the lead has been thrown down by sulphuretted hydrogen; when evaporated to the consistence of extract, the Daphnine is to be obtained by boiling with absolute alcohol, which dissolves it, and deposits it on cooling, in the form of brilliant colourless crystals, of a bitter taste.**—J. D. M.

Officinal. Cortex et Radix.

Officinal preparations. Decoctum Mezerii. Decoctum Sarsaparillæ compositum.

Dosis, *ab* ʒiij. *ad* ʒvi. ter in die, Decocti Mezerei, et *ab* ʒiv. *ad* Oss. bis vel ter in die, Decocti Sarsaparillæ Comp.

References to Plate 12.

A single flower; the same cut open showing the insertion of the stamens. Fig. 1, a Berry. Fig. 2, a Berry cut open. Fig. 3 and 4, Seeds. Fig. 5, Seed laid open.

* Dictionnaire des Drogues, iv. 251.
† Ibid. ii. 617.
‡ Toxicologie Generale.
§ Christison on Poisons, 528.
‖ Histoire Naturelle Medicale, i. 495.
¶ Dictionnaire des Drogues, ii. 252.
** Traité de Chimie, vi. 224.

OLEA EUROPEA. European Olive.

Class and Order, DIANDRIA MONOGYNIA. Nat. Ord. OLEACEÆ.

GEN. CHAR. *Corolla* and *Calix* four cleft: *Drupe* superior, one-seeded: *Embryo* inverse, and furnished with a perisperm. *Schreb.*

Olea *Europea*, leaves lanceolate entire: racemes from the axils of the leaves; flowers crowded.

O. Europea, *Linn. Sp. Pl.* 11. *Woodville, Med. Bot.* iii. p. 369.

THE Olive is a native of the warmer parts of Europe, where it is extensively cultivated for its fruit; it forms a tree from twenty to thirty feet high; the leaves are thick and lance-shaped, and as well as the flowers much resemble those of the common Privet, but the flowers grow in denser but smaller racemes; the fruit is a berry of the size of a large hazel nut, at first green, and when ripe of a purplish colour; in the unripe state they are pickled in salt and water, and are used at our tables, rather to excite thirst, than from any agreeable or pleasant taste. Professor Lindley remarks, "that this order offers almost the only instance of oil being contained in the pericarp, from which olive oil is entirely expressed."

Though sufficiently hardy to bear our winters in sheltered situations, the olive rarely produces fruit in this country; it has been cultivated in England since the year 1648. One species, the *O. fragrans*, is used in China for the purpose of giving a flavour to some particular kinds of tea.—G.

The best olive oil is prepared by the simple expression of the fruit, which has remained in heaps for thirteen or fourteen days, or which has begun to show signs of fermentation. Inferior oils are obtained by allowing the fermentation to proceed till the mucilage be destroyed, or by throwing the fruit into boiling water, before submitting it to pressure.

When taken internally, olive oil acts as a laxative; it is, however, seldom used; as an external application it is occasionally employed. In poisoning with acrid substances, it is extremely useful as an internal remedy; it is also given as an injection in cases of ileus, and in painful ulceration of the rectum. From the large quantity of stearine contained in this oil, it is a very bad conductor of electricity, and on this M. Rousseau has founded a very elegant mode of detecting adulteration.* M. Poutet, availing himself of the property which olive oil possesses of becoming solid when a certain quantity of protonitrate of mercury is added to it, has adopted the following means of detecting adulteration. He prepares the solution of the protonitrate, by dissolving, without the aid of heat, six parts of mercury in seven and a half of nitric acid, sp. gr. 38. One part of this, shaken with twelve of oil, forms a solid mass, in three or four hours in winter, and in six or seven in summer. If the oil be pure, the mass is perfectly solid and smooth on the surface; but if any other oil be present

* Duncan's Supplement, 76.

the surface is rough, or marked with lines, and the solidity is diminished in proportion to the quantity of oil with which the olive oil is adulterated.* The protonitrate used by M. Poutet does not succeed well as a test; no nitrate prepared without heat does. The pernitrate made with heat acts with certainty, and by its means a $\frac{1}{10}$, and even a smaller quantity, of lintseed or other fixed oil may be detected. M. Felix Boudet has found that some other oils are similarly affected, particularly castor oil.†

Dr Bidot, Physician to the military hospital at Loning, has lately proposed the dried leaves of the olive as a substitute for quinine in intermittent fever, but trials, which have been made of its efficacy in La Charité, though they proved that it was not without effect, yet in their results fell short of what had been stated by Dr Bidot. ‡ Pelletier has discovered in the gum of the olive a substance to which he has given the name of Olivile; it is bitter, sweet, and aromatic; inodorous, white, crystalline, soluble in alcohol, the alkalies, and in hot water, insoluble in dilute acids. § M. Pallas has discovered an analogous substance, to which he has given the name of *Vauqueline.* ‖—J. D. M.

Officinal. Fructus recens.
Dosis, *a* ʒii. *ad* ℥i. Olei Olivarum.

PIPER NIGRUM. *Black Pepper.*

Class and Order, DIANDRIA TRIGYNIA. Nat. Ord. PIPERACEÆ.

GEN. CAR. *Calix* and *Corolla* wanting; *Berry* one-seeded; *Spadix* simple.

Piper *nigrum*, Leaves broadly ovate pointed, seven-nerved, smooth; joints of the stems swollen.

P. nigrum, *Willd. Sp. Pl.* i. p. 159. *Woodville, Med. Bot.* 513.

THIS well known spice is a native of the East Indies, and the islands of Sumatra, Java, Borneo, and the Phillipines; it is a climbing plant, growing to the length of eight or ten feet, its root is perennial, stems round, smooth and jointed, becoming tumid at the joints, woody, straggling and branching; leaves broadly ovate, pointed, entire, smooth, having seven nerves, of a full green colour; flowers in a lax spike, placed on a longish peduncle, which grows opposite the leaves, and alternates with them.

Black pepper is cultivated in the stoves of this country, but we can rarely perfect its fruit, which when ripe is of a deep scarlet colour, and has a very elegant appearance, and is prepared for use by rubbing off the skin when perfectly dry; the berries then become black and shrivelled. White pepper is prepared by macerating the black pepper

* Dictionnaire des Drogues, iii. 119.
† Orfila, Elemens de Chimie, ii. 316.
‡ Richard, Histoire Naturelle Medicale, ii. 20.
§ Orfila, Elemens de Chimie, ii. 343.
‖ Dictionnaire des Drogues, iii. 629.

in water until the outer skin separates; it is afterwards dried, and in the operation loses some of its pungency. This genus contains a great number of species, the whole of which are possessed of the same properties in a greater or lesser degree.—G.

Black pepper is extensively used as a condiment, and from its stimulating power is useful in aiding digestion in phlegmatic habits. When taken habitually and in quantity, it is apt to cause visceral derangement. The taste of this spice is warm and fiery; its odour is aromatic. It exerts a powerful action on the animal economy, causing increased action of the heart and arteries, and when taken in large quantity, producing all the symptoms of irritant poisoning. Dr Christison quotes from Rust's Journal, the case of a man who, from taking between an ounce and a half and two ounces in brandy, was attacked with convulsions, burning heat of the throat and stomach, great thirst, and vomiting of every thing he swallowed. His case was treated as one of simple gastritis, and he recovered.* The fiery, acrid taste depends on a fixed oil, and the stimulating property is also referred to it, but since the discovery of Piperine, much difference of opinion has existed on this subject. The power which pepper possesses of reddening and inflaming the skin, resides in the fixed oil.

Professor Oersted of Copenhagen discovered in the *Piper nigrum* a principle, which he described as being alkaline, and capable of combining with and neutralizing acids. Pelletier repeated these experiments, and found that the crystalline substance of Oersted was incapable of combining with acids, and was not alkaline. Pelletier procured Piperine thus; he exhausted the bruised pepper with alcohol, then distilled the alcoholic tinctures to the consistence of extract; he acted upon this extract with water, until no farther colour was communicated. That portion which was insoluble in water, was dissolved in alcohol, and left to evaporate spontaneously;—a crystalline mass was left, which was purified by repeated solution in alcohol, and crystallization. † Poutet employed caustic potass to free Piperine from the acrid oil which adheres to it; his process in other respects resembles Pelletier's. ‡

I have adopted the following modification of Pelletier's process; the distillation is to be stopped when the matter in the retort is of the consistence of oil; this, while warm, is to be thrown into about twenty times it bulk of boiling water; a copious precipitate is immediately formed, which separates more readily if the liquid be boiled. When cold, the oil which is found floating on the surface, is to be separated, and the precipitate is to be collected on a filter of fine linen or cotton. In this state, Piperine is crystalline and of a greenish yellow colour. To purify it still farther, it is to be dissolved in the smallest possible quantity of boiling alcohol, and to be thrown while still warm, into boiling water containing caustic potass in solution. As in the former part of the process, a copious crystalline precipitate is thrown down; this is to be collected on a filter, and again dissolved in alcohol, and precipitated. The solution in alcohol, and precipitation by boiling water containing potass, is to be repeated as often as may be necessary; I have found that twice is quite enough, when white pepper is used, but, I should think a greater number would be requisite, if black were employed, as it contains a larger quantity of fixed oil. When pure, Piperine crystallizes in four-sided prisms, of a very pale yellow colour; it is inodorous and insipid, but its solutions in alcohol are slightly bitter. Diluted acids do not act upon it; concen-

* Christison on Poisons, 574.

† Berzelius, Traité de Chimie, vi. 340.

‡ Dictionnaire des Drogues, iv. 194.

trated sulphuric acid dissolves it, and forms a blood red solution; nitric forms a yellow solution, which becomes reddish; muriatic acid forms a deep-coloured yellow solution.

M. Dominique Mélistates, that the action of piperine as a febrifuge is superior to that of sulphate of quinine; he also mentions that the acrid oil is possessed of febrifuge powers, though in an inferior degree. * Magendie supposes this to depend on a small quantity of Piperine which the oil retains in combination with it. Dr A. T. Thomson, gives an account of some cases in which Piperine has been used in this country; † but the number of observations which have yet been published, is too small to warrant any positive statement as to the comparative virtues and convenience of this substance and the sulphate of quinine. Pepper has long been a popular remedy in agues and fevers of all descriptions, and much mischief occasionally arises from its injudicious use in this way. Besides Piperine and fixed oil, pepper contains a balsamic volatile oil; a gummy colouring substance; extractive analogous to that of leguminous plants; bassorine; malic and uric acids; lignine, and various earthy salts.—J. D. M.

Officinal. Baccæ.

Officinal preparations. Emplastrum Cantharidis Vesicatoriæ Compositum, *Edin.* Unguentum Piperis nigri, *Dub.* Confectio Piperis nigri, *Lond.*

Dosis, *a* gr. x. *ad* ℈i. Baccarum, et a ℈ss. *ad* ʒss. Confectionis.

PIPER LONGUM. *Long Pepper.*

Class, Order, Nat. Ord. and Generic Character, See P. NIGRUM.

Piper *longum*; leaves cordate, pedicled, upper ones sessile.

P. longum, *Willd. Sp. Pl.* i. p. 161. *Woodville, Med. Bot.* p. 516.

THIS species, like the preceding one, is a native of the East Indies, and the islands in the Indian Archipelago; it is easily distinguished from *P. nigrum*, by its cordate leaves and dense pikes; its berries are very small, and the whole plant possesses the same properties as the *nigrum.* Though sometimes used in medicine, it is more generally applied to culinary purposes as a condiment.—G.

The *Piper longum* differs but little in its medicinal virtues from the *nigrum*; it is less aromatic, and more acrid. The analysis by Dulong D'Astafort is nearly the same as that given under the head of *Piper nigrum;* in addition to the substances there mentioned, it is said by him to contain fecula and vegetable mucilage. Berzelius regards what is called fixed oil in this, and the preceding plant, as resin. ‡—J. D. M.

* Richard, Hist. Nat. Med. i. 312.

† Elements of Mat. Med. and Therap. p. 665.

‡ Traité de Chimie, vi. 340.

Officinal. Fructus.

Officinal preparations. Confectio Opii, *Lond.* Pulvis Cinnamomi compositus, *Lond. Dub.* Pulvis Cretæ compositus, *Lond.* Tinctura Cinnamomi composita, *Lond. Edin. Dub.*

Dosis, *a* gr. v. *ad* xv. Fructus in pulvere.

PIPER CUBEBA. *Cubebs, or Java Pepper.*

Class, Order, Nat. Ord. and Generic Character, See P. NIGRUM.

Piper *cubeba*, Leaves elliptic, lanceolate, smooth, pointed, five nerved; berries on short stalks.

P. cubeba, *Willd. Sp. Pl.* i. p. 159.

THE Isle of Java, and other parts of the East Indies, produce the officinal Cubebs, which grows to a considerable size; the leaves grow singly, and are placed opposite the spikes of flowers, which are very small, closely crowded in spikes, and are succeeded by berries of a dull scarlet, placed on short foot-stalks; the fruit is globular, smooth, fleshy, becoming brown in drying.—G.

Though long used by the native practitioners of India for the cure of Gonorrhœa, Cubebs was not employed in Europe till after the year 1818; when a paper, containing an account of the benefit derived from the remedy by the Hindoos, verified by the experience of the author, and other British medical men resident in Java, was published by Mr Crawfurd. Cubebs, like the other peppers, is a powerful excitant, but its stimulating effects rapidly disappear, and its specific power of exciting the kidneys and urinary passages becomes manifest. In cases of gonorrhœa, in which constitutional excitement is considerable, and accompanied by inflammatory fever, Cubebs ought not to be used; it is when the constitutional disturbance has abated, or in forms of the disease in which there has not been any febrile excitement, that benefit is to be expected from its exhibition. The use of this remedy ought to be continued for some time after the discharge has ceased, as the disease is otherwise apt to return.

According to Vauquelin, Cubebs contains a volatile oil, nearly solid; a resin analogous to that of copaiva; a small quantity of another coloured resin; a gummy colouring matter; an extractiform substance, similar to that found in leguminous plants; various salts.*—J. D. M.

Officinal. Baccæ, *Lond. Dub.*

Dosis, *a* ℈i. *ad* ʒi.

* Dictionnaire des Drogues, ii. 228.

CROCUS SATIVUS. Saffron Crocus.

Class and Order, TRIANDRIA MONOGYNIA. Nat. Ord. IRIDEÆ.

GEN. CHAR. *Perianth* coloured; *tube* very long; *limb* cut into six equal segments. *Stigma* three-lobed, plaited.

Crocus *sativus*; stigma protruded, drooping, in three deep linear divisions. *Hooker.*

C. sativus, *Lin. Sp. Pl.* 54. *Fl. Brit.* 39. *Engl. Bot.* 343. *Woodville, Med. Bot. p.* 479.

ROOT bulbous, thickly covered with a loose reticulated skin; leaves long, deep green, with a whitish line passing up the centre of each; flowers growing from a thin transparent sheath; tube, filaments, and pistil long, often attaining six or eight inches in length; the leaves appear early in September, and the flowers about the end of or beginning of October. It increases rapidly by its roots, is a beautiful and very delicate flower, well meriting a place in every garden.

The stigmas of this species produce the saffron of the shops, and the plants are extensively cultivated for this drug, in various parts of England, but it may be doubted if it is truly a native. The saffron is collected and kept closely packed, and either formed into what is termed cakes, or hay saffron; the latter is generally the most pure, any adulteration being more easily detected in this state than when compressed into cakes. When of good quality it has a strong fragrant smell, inclining to aromatic, a warm taste, and readily imparts a beautiful golden yellow colour to boiling water.—G.

Saffron possesses considerable power as an excitant; in small doses it is tonic and stimulating; in larger, antispasmodic, and sedative; in an overdose it produces all the symptoms of intoxication. In France, it is chiefly used as an emmenagogue; in this country, it is seldom used in an uncombined form in medicine. When taken habitually, it colours the perspiration, saliva, and urine yellow, and imparts to them its peculiar odour.*

Saffron owes it medicinal and odoriferous qualities to an essential oil; its colouring power depends on a principle, discovered by Bouillon Lagrange and Vogel, and named by them Polychroite. It is procured by digesting saffron in water, and evaporating the solution to the consistence of extract, by exhausting the extract with alcohol, and evaporating to dryness; the substance which remains is Polychroite, combined with volatile oil. This principle is soluble in alcohol, the fixed and volatile oils, and in alkalies, from which it is thrown down by acids. The golden yellow colour of its solutions is changed to green by nitric acid; and to blue, purple, green, and brown or red, by sulphuric acid. Berzelius gives the following analysis by Bouillon Lagrange and Vogel: 7.5 of volatile oil of a yellow colour, containing colourless stearoptine; 0.6 of wax; 65 of Polychroite (composed of 80 per cent.

* Richard, Histoire Naturelle Medicale, i. 412.

pure Polychroite, and 20 of volatile oil;) 6.5 of gum; 0.5 of soluble vegetable albumen; 10.0 of vegetable fibre; 10 of water. *—J. D. M.

Officinal. Stigmata.

Officinal preparations. Syrupus Croci, *Lond.* Tinctura Croci, *Edin.* Confectio aromatica, *Lond. Dub.* Pilulæ Aloes *c.* Myrrha, *Lond.* Tinctura Aloes Composita, *Lond. Edin. Dub.* Tinctura Cinchonæ Composita, *Lond. Dub.* Tinctura Rhei, *Lond.* Tinctura Rhei Composita, *Lond.*

Dosis, *a* grs. x. *ad* ʒss. Stigmatum.

ZINGIBER OFFICINALE. Common Ginger.

Class and Order, MONANDRIA MONOGYNIA. Nat. Ord. SCITAMINEÆ.

GEN. CHAR. *Corolla* with the interior border umbilicate; *Anther* double, crowned with a single horn-shaped curved beak; *Capsule* three-celled, three-valved; *Seeds* many, arilled; *Embryo* simple, and furnished with both *Perisperm* and *Vitellus*, *Fl. Ind.*

SECTION I. Spikes Radical.

Zingiber *officinale*; leaves subsessile, linear, lanceolate, smooth; spikes elevated, oblong; bracteas acute; lip three-lobed.

Z. officinale, *Roscoe in Trans. Lin. Soc.* viii. p. 348. *ejusd. Monandrian Plants of the natural order Scitamineæ. Roxb. Fl. Ind.* i. p. 47.

Amomum Zingiber, *Willd. Sp. Pl.* i. p. 6. *Woodville, Med. Bot.* v. i. p. 31.

ROOT biennial or perennial, forming hard, knotty, compressed tubers, from which arise a number of round, erect stalks from two to four feet high, which are annual, and are enveloped in smooth membranous sheaths; leaves alternate, of a deep bright green colour, smooth, long and terminating in long narrow points: flower-stalks from six inches to a foot long, enveloped in a few obtuse sheaths, which on the upper part elongate into leaves: Flowers in a dense spike; exterior segments of a pale yellow colour; lip purple with yellow spots.

In the late Mr Roscoe's superb publication of the plants of this natural order, are figured nine species of this curious genus, and in the Flora Indica eleven are enumerated, many of which are now cultivated in this kingdom. They are all natives of the warmer parts of Asia and America. In the East and West Indies, the common ginger is grown extensively for its roots, which are exported, either dry, (the ginger of commerce) or in a green state preserved in sugar.

Ginger affords an excellent example of underground stems, *Rhizoma* of modern botanists, being what are generally denominated roots; but the true roots are the fibres only which grow from these parts, in a similar manner with those of the more familiar genus, Iris. Most of the plants constituting this natural family are aromatic, and all the species are highly interesting, either from the singularity of structure, or elegance of their flowers, also from affording a considerable number of useful drugs.—G.

* Richard, Histoire Naturelle Medicale, i. 411. † Traité de Chimie, vi. 288.

The two kinds of Ginger, which are sold under the names of black, and white, are the produce of the same plants, and of the same gathering. The black is prepared by being immersed in boiling water, and dried; the white, by being deprived of its skin, and dried in the sun. As the best roots are selected for the latter, the white ginger is found to be stronger than the black, and sells at a higher price. In medicine, the white is commonly used; for domestic and culinary purposes, the black is more frequently employed. Ginger is a stimulant tonic, and is useful in aiding digestion in phlegmatic habits; in dyspepsia, arising from the torpid action of the stomach and bowels, and in flatulent colic, it is also useful. Some authors recommend its employment in gout. The effect on the circulation is not so powerful, as the pungent taste and tonic properties would lead us to suppose; Ginger differs from cayenne, and some other spices, in causing a sensation of heat in the stomach, which they, though they as powerfully affect the mouth and throat, do not occasion. Ginger is exhibited in the form of tincture, powder, or lozenge. An empirical preparation under the name of "Oxley's essence of ginger," has acquired considerable celebrity, and is, I believe, a very good form of administering this drug.

Bucholz and Morin have each analysed this plant. The analysis by the former is as follows; 1.56 parts of volatile oil possessing the odour and taste of ginger; 3.60 of a soft acrid aromatic resin; 0.65 of an extract soluble in alcohol and in water, and having a bitter and burning taste; 10.5 of an acid extract insoluble in alcohol; 12.5 of gum; 19.75 of starch, resembling vegetable mucilage; 8.3 of vegetable mucilage; 26.0 of residue soluble in potass; 8. of woody fibre; 11.9 of water; loss 2.31.* Morin's analysis is not very different from the above; he describes the essential oil as of a bluish green, and mentions the existence of starch in the root. Several plants in the natural family of the Scitamineæ contain a large quantity of starch in their roots, and in India a kind of arrow-root is prepared from the *Curcuma angustifolia*. † The allied natural family, the Marantaceæ, produce the well known Arrow-Root.

Richard says, "the English prepare from the Ginger a very exciting beverage, which they call Ginger-Beer." ‡—J. D. M.

Officinal. Radices.

Officinal preparations, Tinctura Zingiberis, *Lond. Edin. Dub.* Syrupus Zingiberis, *Lond. Edin. Dub.*

Dosis, *a* gr. v. *ad* ℈i. Pulveris; *a* ʒi. *ad* ʒii. Tincturæ; et *a* ʒiss. *ad* ʒiii. Syrupi.

* Berzelius, Traité de Chimie, vi. 172.

† Lindley, Introduction to the Natural System of Botany, 267.

‡ Histoire Naturelle Medicale, i. 421.

ALPINIA Cardamomum. Lesser Cardamom.

Class and Order, Monandria Monogynia. Nat. Ord. Scitamineæ.

Gen. Char. *Corolla* with the interior border unilabiate; *Anther* double, naked; *Capsule* berried, three-celled; *Seeds* few or many, arilled; *Embryo* simple, and furnished with both *Perisperm* and *Vitellus*. *Schreber*.

Section II. Inflorescence radical.

Alpinia *Cardamomum*; Scapes from the base of the stem, compoundly flexuose, procumbent; lip three lobed, with calcarate base. *Flora Indica*, v. i. p. 70.

Cardamomum minus, *Lin. Sp. Pl. Willd.* v. i. p. 8.
Amomum repens, *Roscoe in Trans. Lin. Soc.* v. viii. p. 353. *Woodville, Med. Bot.* v. ii. p. 356.
Amomum Cardamomum, *White in Trans. Lin. Soc.* v. x. p. 230. t. 4, 5.

From the synonyms it will be observed that the structure of this flower was not clearly understood, or presented so anomalous a structure as to render its proper station dubious; but it now appears judiciously placed, in the Flora Indica of the late Dr Roxburgh, in the genus *Alpinia*.

Root perennial, creeping, tuberous with fleshy fibres; stems perennial, erect, smooth, jointed, enveloped in the spongy sheaths of the leaves, from six to nine feet high; leaves bifarious, subsessile on their sheaths, lanceolate, fine pointed, somewhat villous above, resinous underneath, entire; length from one to two feet; sheath slightly villous, with a round stipulary process rising above the mouth; scapes several, from the base of the stems, resting on the ground, flexuose, jointed, ramous, from one to two feet long. Flowers alternate, inner lip or nectary obovate and much longer than the divisions of the exterior border; margins somewhat curled, with the apex slightly three-lobed, marked chiefly in the centre with violet stripes, at each side of its insertion, and close by the base of the filament is a small acute hornlet, as in most of the plants in this genus, and in several other genera of our other Indian Scitamineæ.—*Flora Indica*.

This interesting plant belongs to a genus containing some of the most splendid productions of the vegetable kingdom, as the *A. nutans*, *auriculata*, &c. Its seeds, which are the only officinal part of the plant, are highly aromatic, and are known in the shops by the name of Cardamoms; when good and fresh they are of a dark but bright brown colour, and possess an agreeable warm aromatic flavour, which they retain more completely when imported in the capsule, and speedily lose it when exposed to the air.

Dr Roxburgh enumerates twelve species of this genus, all natives of India. "The *cardamomum* shrub is found in great abundance among the western mountains of Mynaad, and

is called by the natives of Malabar *Ailum chedy* (the ailum shrub.) The seeds of the *Amomum Cardamomum* are of an agreeable aromatic taste, and are used by the Malays as a substitute for the true Cardamom of Malabar."—G.

The seeds of the Cardamom are used in medicine chiefly in combination with other aromatic tonics; they are useful in colic arising from flatulence, and in the dyspepsia of weak habits; they form agreeable additions to some other tonics, and cover the taste of some nauseous drugs. The compound tincture of Cardamom was recommended in the first stage of cholera, and was occasionally useful in arresting the nausea, and in relieving the pain of the stomach and bowels. In the common cholera of this country, the compound tincture of Cardamom or of Cinnamon, when combined with a few drops of laudanum, often completely cuts short the symptoms. The Cardamom seeds contain 4 per cent. of volatile oil, colourless, and possessing their taste and smell; 12.5 of an acrid resin; extractive matter, and mucilage. *—J. D. M.

Officinal. Semina.

Officinal preparations. Tinctura Cardamomi, *Lond. Edin. Dub.* Tinctura Cardamomi composita, *Lond. Dub.* Pulvis Aromaticus, Tinctura Cinnamomi composita, *Lond. Edin. Dub.*

Dosis, *a* gr. v. *ad* xv. Pulveris fructus; *a* ʒi. *ad* ʒii. Tincturarum; et *a* gr. v. *ad* x. Pulveris Aromatici.

GRATIOLA OFFICINALIS. Hedge Hyssop.

Class and Order, DIANDRIA MONOGYNIA. Nat. Ord. SCROPHULARIÆ.

GEN. CHAR. *Corolla* one-petalled, irregular; *Sterile filaments* two, affixed to the lower lip of the corolla; *Anthers* double, and connected; *Capsule* superior, two-celled, two-valved; *Seeds* numerous. *Schreb.*

Gratiola *officinalis*; leaves ovate, lanceolate, serrated, five-ribbed, smooth, longer than the pedicels.

G. officinalis, *Lin. Sp. Pl.* 24. *Woodville, Med. Bot.* v. i. p. 132.

A NATIVE of the south of Europe, affecting wet situations. It is of easy culture, and was introduced into the gardens of Britain in 1568. In the Flora Indica, Dr Roxburgh describes eighteen species as natives of India, and one is found in Virginia, all of which, like the European species, delight in moist situations.

Root perennial, whitish, fibrous; stem simple, round, erect, about a foot high; leaves

* Berzelius, Traité de Chimie, vi. 294.

sessile, opposite, lanceolate, serrated from about the centre to the points; flowers growing from the base of the leaves, of a pale purple colour, streaked with darker veins; tube yellowish; filaments four, of which only two are furnished with anthers; capsule of two cells; seeds numerous. All the species are possessed of a bitter nauseous taste; and Rumphius remarks, "that the leaves of *G. amara* are exceedingly bitter, and might, no doubt, answer valuable purposes in medicine."—G.

The *Gratiola officinalis* is occasionally used by the poorer classes as a cathartic; when taken in a small quantity, it acts as a drastic purgative, frequently causing nausea; when taken in an over-dose, all the symptoms of acrid poisoning are produced.

Orfila gives an account of several cases, in which nymphomania was caused by injections prepared from this plant.

The same author gives the details of a number of experiments on dogs, and draws from their results the following conclusions:—1. that the Gratiola causes violent local irritation; 2. that it does not cause death from its absorption, but by its local action; 3. that it acts with great activity when injected into a vein. *

Vauquelin has analyzed this plant, and has found it to contain,—a peculiar resinoid matter of a bitter nauseous taste, on which its activity and taste depend; a small quantity of vegetable albumen; a gummy extractive; various salts; silica, and oxide of iron, in the ashes of its extract. The resinoid is nearly insoluble in water; but when combined with the gum and salts, it becomes easily soluble in both hot and cold water. †

Gleditsch has observed that horses which are fed on hay containing much of the Gratiola soon became lean. ‡—J. D. M.

Officinal. Radices.

Dosis, *a* gr. x. *ad* ℈i.

* Orfila, Toxicologie Generale, i. 750.

† Berzelius, Traité de Chimie, vi. 256.

‡ Dictionnaire des Drogues, iii. 51.

Valeriana officinalis.

VALERIANA OFFICINALIS. *Officinal or wild Valerian.*

Class and Order, TRIANDRIA MONOGYNIA. Nat. Ord. VALERIANEÆ.

GEN. CHAR. *Calix* a thickened margin to the top of the germen, at length unfolding into a feathery pappus; *Corolla* monopetalous, five cleft, gibbous or spurred at the base; *Fruit* one-seeded, crowned with the feathery *Pappus*. *Hooker.*

Valeriana *officinalis*; Corolla gibbous at the base; leaves all pinnated; leaflets lanceolate, nearly uniform, serrated.

V. officinalis, *Linn. Sp. Pl.* 45. *Fl. Brit.* 38. *Engl. Bot.* 698. *Woodville, Med. Bot.* v. ii. p. 262. *Fl. Lond.* ed. 2, v. iii. *Hooker, Br. Fl.* p. 14.

THE Valerian is an indigenous plant of common occurrence, being usually found in low moist situations, but sometimes affecting more elevated and drier places; in the latter situations, the root (which is the officinal part of the plant,) is possessed of much more powerful properties than when growing in wet spots. There is also much difference in the appearance of the plant in these various places of growth, the leaves being broader, and the plants more robust, when growing in watery than on dry places.

For medicinal purposes the roots should not be taken up during their greenest state, as their peculiar odour is much more powerful towards the close of autumn and during winter, than at other periods.

When cultivated in gardens, the Valerian is liable to be injured by cats, which are so partial to the smell that it is used occasionally as a bait to decoy them into traps.

Twenty species are enumerated in Loudon's *Hortus Britannicus*, and two others in the *Flora Indica*. Only four are found in Great Britain, and of these two have very equivocal claims to be considered indigenous.—G.

The action of valerian on the system is first stimulant, then antispasmodic and sedative. In nervous diseases, and in fever, it is frequently administered, and is one of the most useful and powerful antispasmodics which the vegetable kingdom affords; the taste of the root, which is the only part used in medicine, is bitter, and slightly acrid; its smell strong and disagreeable. Its virtues depend on a volatile oil, which possesses its odour in a concentrated degree; this oil is most abundant, and the root consequently most active, when the plant has grown in a dry elevated situation. Though the smell of Valerian be considered disagreeable by Europeans, some species are used in the east for the purpose of perfuming baths. The *V. Jatamensi* is supposed to be the true spikenard, and is valued in India both for its odour and medicinal properties.* Cats are very fond of the smell of Va-

* Lindley, Introduction to Natural System of Botany, 197.

lerian, and are thrown into a sort of intoxication by it; the male is more affected by it than the female. In Sicily, the young leaves of the red valerian are used as salad, and an allied genus, the Valerianella, (lamb's lettuce,) furnishes several plants, the leaves of which are considered, by some, equal to those of the *Lactuca sativa*, (garden lettuce.)*

Berzelius gives the following analysis by Trommsdorff:—1.2 of volatile oil; 12.5 of extractive insoluble in alcohol; 18.75 of gum; 6.25 of soft resin; 63 of woody fibre. The volatile oil smells strongly of camphor. The extractive matter insoluble in alcohol, can be obtained pure by precipitation with a salt of copper or lead, and by subsequent separation of the metallic salt by sulphuretted hydrogen. The soft resin has, as well as the extractive, the smell of leather. The fresh juice deposited a small quantity of starch.†—J. D. M.

Officinal. Radices.

Officinal preparations. Tinctura Valerianæ, *Lond. Dub.* Tinctura Valerianæ ammoniata, *Lond. Edin. Dub.* Extractum Valerianæ, *Dub.* Infusum, Valeriana, *Dub.*

Dosis, *a* ℈i. *ad* ʒi. Pulveris; *a* ʒi. *ad* ʒij. Tincturæ; *a* ʒss. *ad* ʒi. Tincturæ ammoniatæ; *a* g. x. *ad* ℈iss. Extracti; et *ab* ʒ ss. *ad* ʒij. Infusi.

References to Plate 13.

Fig. 1. a Flower; Fig. 2. Style; Fig. 3. Fruit with the Pappus.

ROSMARINUS OFFICINALIS. Common Rosemary.

Class and Order, DIANDRIA MONOGYNIA. NAT. ORD. LABIATÆ.

GEN. CHAR. *Corolla* unequal, with the upper lip two-pointed; *Filaments* long, curved; *Stigma* toothed.

Rosmarinus *officinalis*; leaves simple.

R. officinalis, *Lin. Sp. Pl.* 33. *Fl. Græc.* i. 14.

THIS shrub is a native of the south of Europe, but is quite hardy, and thrives well in this country; it grows to the height of from three to six feet; the branches are straggling, and covered with a loose greyish bark; leaves growing in whorls, long, narrow, rigid, obtuse; of a dark green on the upper side, beneath silvery grey; flowers growing from the axils of the leaves; of a pale blue colour with white blotches.

Rosemary was introduced into England in the year 1598; it grows wild in the southern provinces of France, but more abundantly in Spain, Italy, and the Levant.—G.

* Loudon, Encyclopædia of Plants, 34.

† Traité de Chimie, vi. 216.

The smell of the Rosemary is strong and fragrant, and bears a slight resemblance to that of lavender, but is not nearly so pleasant. The taste is pungent, bitter, and aromatic. It is not often used in medicine, but possesses powerfully stimulating properties.

The taste, odour, and medicinal qualities, reside in an essential oil, which pervades every part of the plant. It is very acrid, and is seldom given in an uncombined form; it contains a considerable quantity of camphor, which is deposited in a crystallized state, if the oil be allowed to remain at rest for a length of time; it differs from the other volatile oils, in not being easily decomposed by the sulphuric or nitric acids. * It is one of the principal ingredients, in the preparation known by the name of "*Hungary water*," and it also enters into the composition of *Eau de Cologne*.—J. D. M.

Officinal. Herba et Flores.

Officinal preparations. Oleum Volatile Rosmarini, *Lond. Edin. Dub.* Spiritus Rosmarini, *Lond. Edin. Dub.*

Dosis, *a* gr. x. *ad* xv. Herbæ; a gtt. ii. *ad* vi. Olei; et *a* ʒiij. *ad* ʒvi.

IRIS FLORENTINA. *Florentine Iris, or Sweet Orris.*

Class and Order, TRIANDRIA MONOGYNIA. Nat. Ord. ENSATÆ, *Lin.* IRIDEÆ, *Brown.*

GEN. CHAR. *Perianth* single, petaloid, six-cleft, each alternate segment longer and reflexed; *Stigmas* three, petaloid, covering the stamens.

Iris *florentina*; corolla bearded; leaves sword-shaped, smooth, shorter than the two-flowered scape.

I. florentina, *Lin. Sp. Pl.* 55. *Bot. Mag*, 671. *Woodville, Med. Bot.* v. i. p. 112.

THIS handsome species, which was cultivated by Gerard in 1596, is a native of Italy, and, like most of the genus, thrives exceedingly in this kingdom, so as frequently to become troublesome in gardens. Root large, tuberous, compressed, fibrous, externally brown, within of a pale yellowish-white colour; flowers large, of a delicate pale-blue tint.—G.

Orris root is chiefly used as a perfume; it enters into the composition of most dentifrices, and into many of the essences prepared for the toilet; its smell resembles that of the *Viola odorata*, and its tincture is sold under the name of Essence of violets.

In doses of from twelve to twenty grains, it is said to be useful in chronic catarrhs, and in asthma. † Small pieces of the root, cut of the size and into the form of a pea, are used

* Dr A. T. Thomson, Elements of Materia Medica and Therapeutics, i. 189.

† Richard, Histoire Naturelle Medicale, i. 409.

for the purpose of keeping issues open; besides their mechanical effect, some benefit is supposed to arise from the stimulating property which they possess. * A spirituous liquor made by digesting Orris root in proof spirit, to which a little sugar has been added, is sold as *Brandy*.

According to Vogel, the Orris root contains a volatile oil; nearly solid, of a pale yellow colour, and of a fragrant odour; starch; gum; extractive matter; a fixed oil, or rather a resin, bitter and acrid; woody fibre. †—J. D. M.

Officinal. Radices.

KRAMERIA TRIANDRIA. *Rhattany.*

Class and Order, TETRANDRIA MONOGYNIA. Ord. POLYGALEÆ.

GEN. CHAR. *Calix* of four or five segments, silky outside; *Petals* four or five, two of which are orbicular, the third constantly of two or three united petals, all unguiculate; *Stamens* three or four, free from the base; *Anthers* bursting by two pores; *Fruit* one-celled, one-seeded, globose, indehiscent, echinated.—*Don.*

Krameria *triandra*; leaves oblong, acutish, silky-villous; pedicels rather longer than the leaves, furnished with two bracteas, disposed in a short raceme.

K. triandra, *Ruiz et Pavon, Fl. Peruv.* i. t. 93. *Don's System of Gardening and Botany*, v. i. p. 370.

RHATTANY is a native of Peru, growing in the declivities of sandy mountains, from whence its roots are gathered in large quantities and exported into Europe; from which a deep red colour is obtained, and is principally used in the manufacture of Port wine. So important were its uses considered, that the Spanish and Portuguese merchants have kept its properties so concealed, that in this country the root was unknown till very lately. It forms a low shrub, scarcely exceeding one foot in height.—G.

Rhattany root was first introduced into European practice by Ruiz, one of the authors of the Flora of Peru; he recommended it in leucorrhœa, in hæmorrhages, in obstinate diarrhœa; and, in short, in all cases in which astringent tonics were indicated. Subsequent trials have verified M. Ruiz's statements. ‡ The Rhattany may be exhibited in the form of decoction, extract, or tincture; the extract which is prepared in America, is, of course, liable to adulteration, and is consequently variable in its strength. This, as well as kino, is used for the adulteration of Port wine, § and from the astringency of its taste, and the deep red

* Dictionnaire des Drogues, iii. 273.

† Berzelius, Traité de Chimie, vi. 197.

‡ Dictionnaire des Drogues, iv. 376.

§ Lindley, Introduc. to Nat. System of Botany, 146.

colour which it imparts, it is well suited for the purpose. The Peruvians use the Rhattany as a dentifrice, and it is now pretty often employed in a similar manner, in this country.

Trommsdorff, Gmelin, and Vogel, have examined this plant. Gmelin found it to contain 38.3 of tannin; 6.7 of extractive, containing sugar; 2.5 of a mucilaginous substance, containing nitrogen; 8.3 of a starchy matter soluble in boiling water; 43.3 of woody fibre. * Peschier found a peculiar acid, to which he gave the name of *Krameric*, but none of the above-mentioned chemists detected it, in the specimen which they examined.—J. D. M.

Officinal. Radices.

Dosis, *a* ℈i. *ad* ʒi. Pulveris radicis; et *a* gr. xv. *ad* ℈iss. Extracti.

ANAGALLIS ARVENSIS. Scarlet Pimpernel, or Poor Man's Weather-glass.

Class and Order, PENTANDRIA MONOGYNIA. Nat. Ord. PRIMULACEÆ.

GEN. CHAR. *Calix* of five segments; *Corolla* rotate; *Stamens* hairy; *Capsule* bursting transversely.

Anagallis *arvensis*; leaves ovate, sessile, dotted beneath; margin of the corolla crenate, with glandulous hairs.

A. arvensis, *Lin. Sp. Pl.* 211. *Fl. Brit.* 230. *Engl. Bot.* t. 529. *Fl. Lond.* ed. 2. v. i. *Hooker, Br. Fl.* p. 87.

THIS beautiful annual is common to most parts of this kingdom, and is well known for the beauty of its blossoms, as well as from the circumstance of its closing its flowers previous to and during damp weather, whence its common English name. It varies in the colour of its flowers, being usually of a deep scarlet, sometimes pure white, or pink, and I am inclined to believe the *A. cærulea* is only a variety of the present species. It was formerly held in esteem for medical purposes, but has fallen into disuse; yet, as some instances are recorded of serious accidents having arisen from its leaves having been inadvertently eaten, it is enumerated as a species rather to be classed with the suspected, than known poisonous plants.—G.

The *Anagallis arvensis* is not used in medicine. Guillemin, in the Dictionnaire des Drogues,† states that some practitioners have held it up as a specific in madness, but he gives it as his opinion, that not the least reliance is to be placed on these assertions. In this opinion most medical men will, I think, coincide.—J. D. M.

* Berzelius, Traité de Chimie, vi. 185. † Dictionnaire des Drogues, iii 512.

SIUM LATIFOLIUM. Broad-leaved Water Parsnep.

Class and Order, PENTANDRIA DIGYNIA. Nat. Ord. UMBELLIFERÆ.

GEN. CHAR. *Fruit* nearly ovate, compressed, striated; *Involucre* of many leaves; *Petals* cordate, uniform.

Sium *latifolium*, leaves pinnate; leaflets oblong, lanceolate, equally but sharply serrated; umbels terminal.

S. latifolium, *Lin. Sp. Pl.* p. 361. *Fl. Brit.* p. 312. *Engl. Bot.* 204. *Fl. Lond.* (New Series) v. ii. *Hooker, Br. Fl.* p. 125.

ROOT creeping, perennial; stems from three to six feet high, branched, hollow, smooth, deeply grooved and angular; leaves large, those growing under water often deeply cut, those above narrower, shorter, with fewer leaflets and more acute; petioles with a membranous sheath.

A common inhabitant of ditches and marshy places in most parts of Britain, increasing rapidly by its roots. The leaves which are sometimes consumed by cattle are very injurious, and in some instances, where they have been inadvertently eaten as water-cresses, have proved nearly fatal. It bears a close resemblance to the next species, but is easily known by the broad sheaths to the foot-stalks.—G.

Reference to Plate 14.

Fig. 1, a portion of the Stem with the sheathing base of the leaf-stalk; Fig. 2, Calix; Fig. 3, a Flower; Fig. 4, Fruit, natural size; Fig. 5, Calix and Pistil; Fig. 6. Fruit; Fig. 7, Fruit bursting into two; Fig. 8, Seed divested of its coverings; Fig. 9, Seed cut vertically to show the albumen and embryo. All but Figs. 1, 2, and 4, magnified.

PLATE 14.

Sium latifolium

W.H Lizars sculp!

Sium angustifolium

SIUM ANGUSTIFOLIUM. *Narrow-leaved Water Parsnep.*

Class, Order, Nat. Ord. and Gen. Char. See *S. latifolium.*

Sium *angustifolium*; leaves pinnate, leaflets unequally lobed and serrated; umbels opposite the leaves, pedunculated.

S. angustifolium, *Fl. Brit.* p. 313. *Engl. Bot.* 139. *Fl. Lond.* (New Series) v. ii. *Hooker, Br. Fl.* p. 125.

Root perennial and creeping; stems three or four feet high, erect, branched, hollow, round, and but slightly striated; leaves alternate, pinnate, with a single leaflet at the point, the lower ones the largest. This is a more slender plant than the preceding, and is readily distinguished by its smaller and unequally cut leaves, and by the sheaths of the stalks.

Its properties are considered as identical with those of the *S. latifolium*, but more active: some fatal accidents are recorded from the leaves having been eaten as cresses. Till more certain information is obtained relative to their noxious properties, it will be prudent to avoid the whole of our native species, though it may eventually prove that the injurious qualities attributed to the Siums really belong to some other genus.—G.

Some doubt seems to exist, as to the properties of the plants forming this genus; the two species above described, are said to be poisonous; the *Sium nodiflorum* is given in very large doses as a diuretic, (℥iv. of the juice of the fresh root in milk.) * The *S. Sisarum* or *Skirret* is stated to be nutritious and wholesome. The *S. ninsi* was supposed to be the plant which produced the celebrated Ginseng of the Chinese, † a medicine, which they employ in all diseases, and which the Emperor in 1709, sent an army to obtain. ‡ But though the Ginseng is now known to be the produce of the *Panax quinquefolium*, yet we find the *S. ninsi* cultivated in China as an excitant. § The *S. Sisarum*, according to Berzelius, does not essentially differ from carrot or parsnep in its chemical constitution, and contains one-twelfth of its weight of sugar, resembling that of the sugar cane. ‖—J. D. M.

Reference to Plate 20.

Sheathing base of the leaf stalk.

* Loudon, Encyclopædia of Plants, 214.
‡ Ainslie, Materia Indica, i. 79.
‖ Traité de Chimie, vi. 210.
† Hooper's Medical Dictionary, 1129.
§ Dictionnaire des Drogues, i. 412.

PLATE 20.

ANCHUSA TINCTORIA. Alkanet.

Class and Order, PENTANDRIA MONOGYNIA. Nat. Ord. BORAGINEÆ.

GEN. CHAR. *Calix* five-cleft; *Corolla* funnel-shaped; *Tube* strait, its mouth closed with convex, connivent scales; *Nuts* concave at the base.

Anchusa *tinctoria*; leaves lanceolate, obtuse; stamens shorter than the corolla; the whole plant beset with rigid hairs.

A. tinctoria, *Woodville, Med. Bot.* v. ii. p. 251. *Sibt. Fl. Græca*, v. ii. t. 166.

ROOT perennial, long, externally of a purplish red colour; stems thick, round, branched, from one to two feet high; leaves long, linear, obtuse, partially surrounding the stem, the flowers varying as they advance in age from a red to a purple colour, thickly set together at the extremity of the branches; the stalks, leaves, and calices clothed with numerous rigid hairs.—G.

Alkanet is not used medicinally; it is retained as an article of the Materia Medica, from the property it possesses of imparting a fine red colour to oils and fats. The colouring matter has been isolated and carefully examined by John, of Berlin. It is of a deep red colour, and breaks with a resinous fracture; it is soluble in alcohol, ether, the oils and fats. Alkalies dissolve it, the solution is blue; acids precipitate it from alkaline solutions, and change the blue to red; concentrated sulphuric acid forms an amethystine solution; nitric acid exerts little action upon it; muriatic does not act at all. The salts of tin, lead, and mercury form precipitates of various colours. When its alcoholic solution is added to boiling water, the red is changed to bluish-green, and on evaporation a black mass is left, which forms lilac solutions with alcohol; chlorine changes the lilac to red; the acids to green; and the alkalies to blue. *—J. D. M.

* Berzelius, Traité de Chimie, vi. 10.

ERYTHRÆA CENTAURIUM. Common Centaury.

Class and Order, PENTANDRIA MONOGYNIA. Nat. Ord. GENTIANEÆ.

GEN. CHAR. *Calix* five cleft; *Corolla* funnel-shaped, continuing; *Limb* short; *Anthers* at length spirally twisted; *Style* erect; *Stigmas* two; *Capsule* linear, two-celled. —*Brown.*

Erythræa *Centaurium;* stem nearly simple; leaves ovato-oblong; flowers sessile; calix shorter than the tube of the corolla.

E. Centaurium, *Fl. Scot.* i. p. 79. *Smith, Engl. Fl.* v. i. p. 320. *Hooker, Br. Fl.* p. 92.
Gentiana Centaurium, *Lin. Sp. Pl.* 332. *Fl. Dan.* 617.
Chironia Centaurium, *Curtis, in Fl. Lond.* v. i.; *Willd. Sp. Pl.* i. p. 1068. *Fl. Brit.* 257. *Engl. Bot.* 417. *Woodville, Med. Bot.* p. 435, t. 157.

ROOT annual, fibrous, woody; stalk from a few inches to a foot high or more, upright, smooth, and angular; leaves opposite, sessile, smooth, oblong, blunt at the point, and narrowed at the base; those of the stalk narrow, pointed, upright, three-ribbed, the uppermost often bent inwards; flowers rose-coloured, growing in a corymb, upright, and sessile; corolla monopetalous, funnel-shaped, the tube cylindrical, striated, extremely thin, twice the length of the calix; limb divided into five short ovate and spreading segments; stamens five; filaments white, thread-shaped, springing from the top of the tube; anthers oblong, incumbent, of a yellow colour, finally twisted; germen oblong, filling the tube of the corolla.

The variety of situations in which this plant grows in its wild state, appears to me to have occasioned the different appearances it assumes; on dry, chalky, and barren spots, in hedge-rows, and sometimes in woods, it assumes that form under which it is the *E. Centaurium;* on sandy spots on the sea shore, it varies from an inch to four or five inches high, with its stem much branched; it is then *E. pulchella* or *littoralis*, and the broad-leaved variety, though appearing more like a species, may be found gradually emerging into one or other of the varieties. I have found all these varieties abundantly on the Fern Islands in the Firth of Forth; the *latifolia* less frequently than the other sorts.

On the chalky hills of Surrey and Kent, I have repeatedly met with specimens having purely white flowers, but differing in no other respect from the common species. From its unpleasant, extremely bitter taste, it was known to the ancients by the appellation of *Fel teriæ* or Gall of the Earth; it was formerly in much repute, but it has given place to more powerful and less offensive bitters.—G.

The *Erythræa centaurea*, like others of the Gentianeæ, contains a pure bitter, which is of value as a tonic; the leaves, young shoots, and flowers, are all active, and their bitterness is rendered more intense by drying. It has, as well as others of the same natural fa-

mily, been given in intermittents, but its success is very dubious. M. Dulong d'Astafort has isolated the active principle of this plant, and has proposed giving it the name of *Centaurine.* *—J. D. M.

Officinal. Summitates.
Dosis, *a* ℈i. *ad* ʒi. Summitatum siccarum.

CAPSICUM ANNUUM. *Annual Capsicum, or Guinea Pepper.*

Class and Order, PENTANDRIA MONOGYNIA. Nat. Ord. SOLANEÆ.

GEN. CHAR. *Corolla* rotate; *Berry* juiceless, with two cells.

Capsicum *annuum*; stem herbaceous; peduncles solitary.

C. annuum, *Lin. Sp. Pl.* 270. *Woodville, Med. Bot.* v. iii. p. 391.

ROOT annual; stem branched, angular, smooth, from one to two feet high; leaves ovate, pointed, smooth; flowers solitary, growing from the axils of the leaves, white, on longish petioles; fruit irregular in form, generally green at the base, and changing to a deep scarlet, orange, or yellow to the apex, inflated, either long or roundish, containing a dry spongy white pulp, with numerous flat kidney-shaped seeds.

The common capsicum is a native of both the Indies, and was introduced into Britain in 1596. It is of easy cultivation; requiring to be raised on a hot-bed, and, when the seedlings have attained a few inches in height, to be planted in the open border, where they will flower in June and July, and ripen their fruit in August, September, or later. All the species possess the pungent property of the common kind, but in greater or less excess.—G.

The fruit of various species of capsicum is used as a condiment, under the name of Cayenne pepper. The *Capsicum annuum* is cultivated in Britain for the purpose of pickling; its fruit is used for this purpose, both in a green and ripe state, but it never acquires that pungency for which the East and West India pickles are so much valued. The *Capsicum frutescens* is the hottest variety, and from it alone, the Cayenne pepper ought to be prepared.

The taste of Cayenne is pungent, and acrid, with a flavour peculiar to itself, and not capable of being classed either under the spicy or aromatic. In medicine, Cayenne is used internally in flatulence, and in cholera. In the latter, it seems to be useful; and, from my own experience, I would recommend it as an adjunct to other remedies, as it seems to allay to a great extent the nausea and retching, which are so distressing. In the form of gargle, it is found useful, in *Cynanche maligna*; as an external application to paralytic limbs; † as an addition to sinapisms, to increase their rapidity and certainty; and in tropical fevers,

* Richard, Histoire Naturelle Medicale, ii. 132. † Ainslie's Materia Indica, i. 307.

where there is much determination to the head, as a substitute for Cantharides. * Cayenne is said to stimulate the stomach alone, without causing the constitutional excitement, which most other spices occasion.

Braconnot has analyzed the *Capsicum annuum*, and has found a soft resin, of a reddish-brown colour, soluble in ether, and of an excessively acrid taste; to this he has given the name of Capsicine; he procured it, in the proportion of about two per cent. from the dried pods; he also found gum; an animalised matter; and various salts. †

While analyzing the *Capsicum frutescens*, some years ago, I obtained the substance which Braconnot has called *Capsicine*, by acting on the alcoholic extract with ether, and evaporating the etherial tincture. The matter which remained was extremely acrid, causing an intolerably burning sensation in the mouth and throat, and an increased flow of saliva; when heated to about 120, it melted and formed a transparent fluid of a deep red colour; when heated to about 300, it gave out whitish fumes, which, if inhaled, caused violent sneezing, and a copious flow of tears. Braconnot remarks, that, if a small quantity (i. gr.) be burned in a room, the atmosphere of it becomes so impregnated, as to cause violent sneezing.—J. D. M.

Officinal. Fructus.

Officinal preparations. Tinctura Capsici, *Lond. Dub.*

Dosis, *a* gr. iij. *ad* gr. viii. Baccarum; et *a* ʒi. *ad* ʒiij. Tincturæ.

An infusion made with ʒi. of capsicum, to ℥vi. of water, and ʒv. of vinegar, is used as a gargle.

* Duncan's Dispensatory, 279.

† Berzelius, Traité de Chimie, vi. 302.

POLYGONUM Bistorta. Bistort or Snakeweed.

Class and Order, Octandria Trigynia. Nat. Ord. Polygoneæ.

Gen. Char. *Perianth* single, in five deep coloured, persistent segments, inferior; *Stamens* five to eight; *Styles* two or three: *Fruit* a one-seeded, compressed, or trigonous nut.

Polygonum *Bistorta*; stem simple, bearing one spike; leaves ovate, waved, the radical ones tapering into a foot-stalk.

P. Bistorta, *Lin. Sp. Pl.* 516. *Fl. Brit.* 427. *Engl. Bot.* 589. *Woodville, Med. Bot.* v. i. t. 34. *Fl. Lond.* ed. 2. p. 3. *Hooker, Br. Fl.* p. 182.

Root thick, with numerous small fibres, stems from one to two feet high; upper leaves with long sheaths; spikes cylindrical, very dense; flowers varying from a bright red to a pale pink or white-colour; stamens eight; styles three.

The Bistort is found in moist meadows in various parts of the kingdom, growing in large crowded patches; it is frequently cultivated in gardens, and increases rapidly by its roots; was formerly in repute for its styptic properties, but has now nearly fallen into disuse.

Sixty-eight species are enumerated, ten of which are indigenous to Great Britain.—G.

The fresh root of the Bistort is astringent, and slightly acrid to the taste; it is tonic and astringent, and is useful in chronic diarrhœas, hæmorrhages, leucorrhœa, etc. Before the introduction of Cinchona, this, and many other indigenous tonics were given for the cure of intermittents; since the virtues of that remedy have become generally known, they have been entirely thrown aside. Bistort is generally administered in the form of powder; when combined with gentian, the efficacy of both is said to be much increased. A decoction made by boiling two or three drachms of the fresh root with a pint of water, is frequently used as an injection in chronic ulceration of the vagina, urethra, and uterus. The poorer classes in Siberia eat the root, after its bitterness and astringency have been removed by water. Scheele has found oxalic acid in the root, which also contains a considerable quantity of fecula, on which its nutritious properties depend; a large proportion of tannin, and also of gallic acid. *

The *P. Hydropiper* has an acrid burning taste, which, like that of the *Arum maculatum*, is easily destroyed by heat; when applied to the skin it inflames it, and is occasionally used as a rubefacient in gouty affection.

P. Fagopyrum is a native of Asia, but is naturalized in Europe. In Russia and some parts of Siberia this and the *P. tartaricum* form a large proportion of the food of the inha-

* Dictionnaire des Drogues, i. 333.

PLATE 15.

Polygonum Bistorta.

W.H. Lizars sculp.

bitants. In France, the former is considered very valuable to the agriculturist, from the rapidity with which it ripens; in this country, it is also cultivated, and is known by the name of " Buckwheat." The seeds and root are both used in the northern parts of Europe, but in France and Britain the seeds only. M. Zeuneck has given the following analysis of the seed of the Buckwheat; woody fibre, 26.9431; fecula, 52.2954; gluten, 10.4734; albumen, 0.2272; extractive, 2.5378; gum and mucus, 2.8030; sugar and extractive, 3.0681; resin, 0.3636; loss, 1.2500. From this analysis it will be observed, that the Buckwheat contains all the nutritious principles of the common wheat.—J. D. M.

Officinal. Radices Polygoni Bistortæ.
Dosis, *a* ℈i. *ad* ʒi.

References to Plate 15.

Fig. 1, a Flower laid open. Fig. 2, a Petal and Stamen. Fig. 3, Stigmata and Germen. Fig. 4, 5, Seed. Fig. 1, 4, 5, natural size. Fig. 2, 3, magnified.

CORIANDRUM SATIVUM. Coriander.

Class and Order, PENTANDRIA DIGYNIA. Nat. Ord. UMBELLIFERÆ.

GEN. CHAR. *Calix* of five teeth; *Petals* obcordate, point inflexed, outer one radiant, bifid; *Fruit* globose; *Carpels* with five primary ridges, depressed and wavy, of which the two lateral ones are placed in front of an accessary margin to the inner face; the four secondary ridges more prominent and carinated; *Interstices* without *vittæ*, the inner face of the carpel having two vittæ; *Seed* hollowed in front, covered by a loose membrane; *Universal Involucre* wanting; *Partial* on one side; *Carpels* adhering, separated with difficulty.—*Hooker.*

Coriandrum *sativum.*

C. sativum, *Lin. Sp. Pl.* 367. *Fl. Brit.* p. 320. *Engl. Bot.* t. 67. *Woodville, Med. Bot.* v. ii. t. 181. *Hooker Br. Fl.* p. 116.

AN annual of easy culture, and found wild in some parts of England, where it has formerly been cultivated. This, which Dr Hooker says is the only true species of the genus, has a long taper root; an erect leafy stem; bipinnate leaves; the pinnæ with broad wedge-shaped, toothed segments; the upper leaves becoming gradually more compressed, with very narrow linear segments; those of the upper ones almost setaceous; fruit hemispherical.

* Richard, Histoire Naturelle Medicale, i. 503.

Like the caraway, this plant, from long cultivation, has got dispersed, and is occasionally found wild amongst rubbish or neglected places; it is a native of Italy and the warm parts of Europe. Its seeds are much in request for confectionary as well as for medical uses; the whole plant has, in a fresh state, a powerful offensive smell, from which circumstance it acquires its name, Κορις, a bug. This it loses on drying, and then acquires an agreeable aromatic smell.—G.

Coriander seeds are extensively employed as aromatic, carminative tonics. They contain an essential oil of a warm aromatic taste and pleasant smell. When fresh, the whole plant has a disagreeable odour, but when dried, the smell becomes grateful and aromatic. Like the seeds of the *Carum carui*, they are enveloped in sugar, and, like them, used as sweetmeats. They are frequently added to purgative infusions,—particularly to that of senna, to prevent tormina.—J. D. M.

Officinal. Semina.
Dosis, *a* ℈i. *ad* ʒi.

ANGELICA Archangelica. Garden Angelica.

Class and Order, Pentandria Digynia. Nat. Ord. Umbelliferæ.

Gen. Char. *Calix* obsolete; *Petals* elliptical, lanceolate, entire, and inflexed at the point; *Fruit* subcompressed, two winged; *Carpels* with three elevated dorsal ridges, the lateral ones spreading into the broad wings of the fruit; *Vittæ* various; *Universal involucre* scarcely any.

Angelica *Archangelica;* terminal leaflet lobed; seed free, marked with numerous vittæ.

A. Archangelica, *Lin. Sp. Pl.* 360. *Fl. Brit.* 311. *Engl. Bot.* t. 2561. *Woodville, Med. Bot.* v. i. p. 138. *Hooker, Br. Fl.* p. 119.

Angelica has most probably become naturalized to this country, but it is rare in a wild state. Though commonly cultivated in gardens, it usually affects wet situations, but its aromatic property is more powerful when growing in dry places. The root is biennial, thick, and, in a young state, succulent, becoming woody as it advances in age; stems from three to six feet high, round, channelled, smooth, hollow, from one to two inches in diameter; leaves large, numerous, bipinnate; flowers in large umbels of a greenish-white, almost a pale sulphur colour.

This is probably the best of our native aromatics; it has a powerful smell,—to many too much so, to be agreeable, whilst to others it is a peculiar favourite. In England, its root is preserved with sugar, and sold as a confection for pectoral complaints.—G.

Though not much used in modern practice, the *Angelica Archangelica* is an excellent aromatic tonic. The whole plant has a pleasant aromatic odour, and a sweetish, rather acrid, aromatic taste. The root is the most active part, and, when wounded early in the spring, yields a small quantity of resinous juice, which becomes concrete when exposed to the air. If the root be dug up at this season and dried, the substance of it will be found intersected by numerous veins of this juice in a solid form. *

The seeds are also active, and are occasionally employed as carminatives. † The smaller stems, preserved with sugar, are used as stomachics, in the milder forms of dyspepsia, and as expectorants, in colds and slight pectoral affections.

According to Brandes and Bucholz, the root contains 0.7 of volatile oil; 6.02 of soft resin, to which they gave the name of *Balm of Angelica*; 26.40 of extractive; 31.75 of gum; 5.40 of starch; 0.66 of residual extract; 0.97 of vegetable albumen; 17.5 of water; loss 2.0. It is to the soft resin that Angelica owes its virtues. It is prepared by exhausting the dry root with alcohol, and by evaporating to the consistence of syrup.

Sulphuric acid dissolves this substance, and forms a blood-red solution. Caustic potass, with the aid of heat, dissolves it. It is also soluble in alcohol, ether, and the volatile oils. ‡ —J. D. M.

Officinal. Radices.
Dosis, *a* ʒi. *ad* ʒiii. Radicis.

CARUM Carui. *Common Caraway.*

Class and Order, Pentandria Digynia. Nat. Ord. Umbelliferæ.

Gen. Char. *Calix* obsolete; *Petals* obcordate; *Fruit* laterally compressed, oblong; *Carpels* with five filiform equal ridges, their inner faces plane; *Interstices* with single *vittæ*; *Seed* tereti-convex, plane in the front; *Universal and Partial Involucres* various.—*Hooker.*

Carum *Carui*; stem branched; partial involucre none; general wanting.

C. Carui, *Lin. Sp. Pl.* 378. *Fl. Brit.* p. 330. *Engl. Bot.* t. 1503. *Woodville, Med. Bot.* v. i. p. 145. *Hooker, Br. Fl.* p. 127.

This well-known plant has, like some of its congeners, but slender claims to be considered a native of Britain. From its general use it is, and has long been, extensively cultivated, and most probably has so become naturalized. It grows naturally in the north of

* Duncan's Dispensatory, 223.
† Dictionnaire des Drogues, i. 304.
‡ Berzelius, Traité de Chimie, vi. 172.

Europe. Its root is long and tapering; stem about two feet high, erect, branched, smooth, leafy, and deeply channelled; leaves, on the lower part of the stem on long foot-stalks, of a lively green, in appearance nearly resembling those of the carrot; such as grow on the upper parts of the stem are linear, narrow, opposite; one of them grows from a membranous-edged footstalk, the other small and nearly sessile; flowers growing in dense umbels. The caraway is cultivated for its seeds, which are much used for medical and culinary purposes. In Scotland, the common name is *Carvey*, being slightly altered from the French and Italian, who call it Carvi.—G.

The seeds of the *Carum Carui* are, like those of many other umbelliferous plants, aromatic and stimulant. They are, perhaps, the most commonly used of any, and are excellent carminatives. Their taste, smell, and medical properties, depend upon an essential oil, which they contain in large quantity, (about $\frac{1}{20}$th of their weight.) The taste of both is warm, pungent, and aromatic.

In colic and gastrodynia, a few drops of this oil, or half a teaspoonful of the seeds, are sovereign remedies. Richard recommends that a liniment, formed by adding a few drops of this oil to a small quantity of olive oil, be rubbed over the pit of the stomach or the abdomen, in cases of colic. *

Caraway seeds are frequently added to bread and biscuit, both for the flavour which they impart, and for the purpose of aiding digestion. Enveloped in sugar, they are much used as sweetmeats. The roots of the Carum are aromatic, and when boiled, are said to be pleasant substitutes for parsneps. †—J. D. M.

Officinal. Semina.

Officinal preparations. Oleum Cari Carui, *Lond. Edin. Dub.* Spiritus Cari Carui, *Lond. Edin. Dub.* Aqua Cari Carui, *Lond.*

Dosis, *a* gtt. iii. *ad* gtt. v. Olei essentialis Car. Carui; *a* ʒ i. *ad* ʒ iii. Spiritus; et ab ℥ ii. *ad* ℥ iv. Aquæ stillatæ.

* Histoire Naturelle Medicale, ii. 354.

† Dictionnaire des Drogues, i. 603.

BOSWELLIA SERRATA. Serrated-leaved Boswellia.

Class and Order, DECANDRIA MONOGYNIA. Nat. Ord. BURSERIACEÆ.

GEN. CHAR. *Calix* five-toothed, permanent; *Petals* five, obovate, oblong, spreading, with the margins incumbent in æstivation; *Disk* cup-shaped, crenated, stameniferous; *Stamens* ten; *Style* crowned by a capitate stigma; *Capsule* trigonal, three-valved, and three-celled; *Seed* solitary in the cells, girded by a *membrane.—Don.*

Boswellia *serrata;* leaflets ovate-oblong, taper-pointed, serrated, pubescent, racemes axillary and simple.—*Don, in Gen. Syst. of Gardening*, v. ii. p. 81.

B. serrata, *Colebrooke, in Asiatic Researches*, v. ix. p. 377, *and* v. xi. p. 158.
B. thurifera, *Roxb. Hort. Beng.* p 32. *Fl. Ind.* v. i. 383.
Canarium hirsutum, *Willd. Sp. Pl.* v. iv. p. 760.

FROM Dr Roxburgh we learn, that the *Boswellia serrata*, or frankincense tree, is a native of the mountainous parts of Coromandel, attaining to a large size, and producing the drug known by the name of Olibanum. In the Flora Indica, Willdenow's *Canarium hirsutum* is regarded as this species, but this synonym is applied to another species, the *B. hirsuta*, by Sprengel, which has entire leaves. He describes three species, all of which produce a similar substance with that of the present plant.—G.

Linnæus supposed olibanum to be the produce of the *Juniperus lycia*, but the researches of Dr Roxburgh and Mr Colebrooke have proved, that it is obtained from the *Boswellia serrata*, or *Libanus thurifera*.

Olibanum occurs in the form of semitransparent tears, of a pinkish colour, brittle when cold, but becoming unctuous when heated. Its taste is bitterish, pungent, and slightly aromatic. It burns with a clear steady flame, and diffuses an agreeable odour, and is used as incense in the ceremonials of the Greek and Roman Catholic churches. Olibanum was formerly used in affections of the chest. It is stimulant and diaphoretic, and is given by the native practitioners of India for the cure of gonorrhœa. * It is also employed in rheumatism in the form of vapour. † According to Braconnot, it consists of volatile oil, 5; resin, 56; gum, 30;—according to Plaff, of resin, 53; gum, 47. The resin is of a reddish-yellow colour, brittle, and without taste. It is very soluble in alcohol. It is soluble in sulphuric acid, and is precipitated from it on the addition of water. With nitric acid it forms a kind of bitter extractive, which varies in its solubility. ‡—J. D. M.

Officinal. Gummi Resina.

* Ainslie, Materia Indica, i. 137.
† Dictionnaire des Drogues, ii. 417.
‡ Berzelius, Traité de Chimie, vi. 150.

ANETHUM GRAVEOLENS. *Common Dill.*

Class and Order, PENTANDRIA DIGYNIA. Nat. Ord. UMBELLIFERÆ.

GEN. CHAR. *Carpels* elliptic oblong, compressed, with five equidistant ridges; *Petals* obovate, inflexed, entire.

Anethum *graveolens*; Leaves bipinnate, leaflets awl-shaped; Seeds compressed.

A. graveolens, *Lin. Sp. Pl.* 377. *Woodville, Med. Bot.* v. iii. p. 439.

ROOT biennial, long, whitish, producing two or three stems, which are upright, smooth, deeply channelled, branched, about two feet high; leaves on sheathing footstalks, growing from the joints of the stalks, alternate, smooth, doubly pinnate, the pinnæ linear and pointed; flowers in terminal umbels, yellow, the petals inflexed at the tips.

Dill is a native of Spain and Portugal, but has been cultivated in our gardens since the time of Gerard, 1597. Its seeds are warm and aromatic, like most others of the Umbelliferæ, but possess no peculiar virtue that is not found more abundantly and of a more agreeable flavour in others of the family.—G.

The seeds of the *Anethum graveolens* have a strong disagreeable odour, and a warm, somewhat aromatic taste. They owe their activity to a volatile oil, which they contain in considerable quantity, and are powerfully stimulating, but as there are so many more pleasant stimuli possessed of equal medicinal virtues, they are not often prescribed. The distilled water is prepared from the seeds; a pound of these are to be bruised and distilled with a sufficient quantity of water to prevent empyreuma, and the process is to be stopped when about a gallon has passed over. Nearly half an ounce of volatile oil is procured from a pound of the seeds.*

Dr Ainslie states that the dill seeds are a favourite remedy among the native practitioners of India, and that they seldom fail in curing the flatulent colic of young children.†—J. D. M.

Officinal. Semina.

Officinal Preparations. Oleum Volatile. Aqua Stillata, *Lond.*

Dosis, *a* gtt. iv. *ad* vii. Olei volatilis; et ab ʒi. *ad* ʒiv. Aquæ stillatæ.

* Dictionnaire des Drogues, iii.

† Ainslie's Materia Indica, i. 109. 599.

Œnanthe crocata

ŒNANTHE CROCATA. *Hemlock Water-Parsnep.*

Class and Order, PENTANDRIA DIGYNIA. Nat. Ord. UMBELLIFERÆ.

GEN. CHAR. *Calix* of five teeth; *Petals* obcordate, with an inflexed point; *Fruit* subterete, crowned with the short styles; *Carpels* with five blunt convex ridges, of which the lateral ones are marginal and a little broader; *Interstices* with single *vittæ*; *Seed* tereti-convex, Axis none; *Universal involucre* various; *Partial* of many leaves; *Flowers* of the ray on long pedicles, sterile; those of the *Disk* sessile or shortly pediculate, fertile.—*Hooker.*

Œnanthe *crocata;* leaves tri-quadripinnate, leaflets wedge-shaped, cut and serrated, those of the upper leaves narrower.—*Hooker.*

Œ. crocata, *Lin. Sp. Pl.* p. 365. *Fl. Brit.* p. 319. *Engl. Bot.* 2313. *Woodville, Med. Bot.* v. i. p. 142. *Fl. Lond.* (New Series,) v. ii. *Hooker, Br. Fl.* p. 123.

ROOT composed of numerous tubers, resembling small parsneps, of a whitish colour; stems two or three feet high, branched, hollow, deeply furrowed, the angles acute; leaves long, smooth and shining. The whole plant abounds in a yellow juice of a poisonous quality, and is one of the most virulent poisons among our native plants; six species are British, all of which are of a suspicious nature; frequent accidents have occurred from their inadvertent use. The present species is met with in wet pastures by the sides of ditches, and appears to be generally dispersed through this kingdom; and is said to be particularly injurious, "to brood mares that sometimes eat the root." I should suspect there is some error in this, as the roots are situated quite beneath the soil; but as the whole plant abounds with a fœtid juice, it is likely to have been consumed with other herbage, and to have injured horses as well as other animals.—G.

Dr Christison, speaking of the *Œnanthe crocata*, says "It seems to be the most energetic of the umbelliferous vegetables. In none of the fatal cases was life prolonged beyond three hours and a-half, and in several, death took place within an hour. One man was killed by a single spoonful of the juice." * Orfila gives a minute account of several fatal cases of poisoning with the root of this plant. † The symptoms caused in man, are nausea, vertigo, intense pain in the stomach and bowels, diarrhœa, burning heat of the mouth and throat, tetanic convulsions, coma, delirium, and occasionally discharge of blood from the mouth and nose. After death, the stomach and intestines are found of a reddish purple colour, with gangrenous patches dispersed on their surface. From the symptoms and

* Christison on Poisons, 737.

† Toxicologie Generale, ii. 206–8.

PLATE 16.

morbid appearanees, Orfila draws the conclusion, that it acts as an energetic local irritant; and that it also acts violently on the nervous system. In cases of poisoning with the Œnanthe, the instantaneous evacuation of the stomach by emetics is to be attempted, blood-letting is to be had recourse to, and mucilaginous drinks are to be administered. After the immediate danger from the narcotic action of the poison is over, the acrid effects are to be combated by the application of leeches and blisters, to the epigastrium and abdomen; and if delirium continue, cold to the head, and cupping, or other antiphlogistic measures, are to be employed,

The same plan of treatment applies to the Cicuta, Æthusa, and others of the same class of poisons. This plant is not used in medicine, but the bruised root is frequently employed by the people of Brittany, as an external application to hæmorrhoids. * It is a very dangerous remedy.—J. D. M.

References to Plate 16.

Fig. 1. a Flower. Fig. 2 and 3, Seeds. All magnified.

* Dictionnaire des Drogues, iii. 619.

Helleborus fœtidus

W.H.Lowes scalp.

HELLEBORUS FŒTIDUS. *Fœtid Hellebore, or Bearsfoot.*

Class and Order, POLYANDRIA POLYGYNIA. Nat. Ord. RANUNCULACEÆ.

TRIBE IV.—HELLEBOREÆ.

GEN. CHAR. *Calix* of five persistent leaves; *Petals* eight or ten, small, tubular, two-lipped, nectariferous; *Pericarps or Follicles* nearly erect, many-seeded.

Helleborus *fœtidus;* stem many-flowered, leafy; leaves pedate; calix converging.

H. fœtidus, *Linn. Sp. Pl.* 784. *Fl. Brit.* p. 598. *Engl. Bot.* 613. *Woodville, Med. Bot.* p. 53. *Hooker, Br. Fl.* p. 268. *Don, Syst. Gard.* v. i. p. 46.

A hardy perennial, growing in many parts of Great Britain, in clayey and calcareous soils; but it is to be suspected that it has become naturalized, being formerly much cultivated as a domestic medicine, particularly as a vermifuge.

The root is fibrous, and descends deep into the soil; stem from a foot and a-half to two feet high, leafy; leaves on long, deeply-channelled foot-stalks, which nearly surround the stem; the lower leaves divided into five, seven, or nine leaflets, thick, almost coriaceous, in substance, serrated, of a very dark-green. As the leaves ascend the stem, they become more entire, and the upper ones assume the characters of bracteas, being of an unusually bright pale-yellow green; flowers numerous, of a green colour; tips of the petals purplish; the whole plant powerfully fœtid.

The fœtid hellebore is possessed of similar properties with the other species, and Curtis remarked many years ago, that a very innocent fraud was constantly practised, in substituting the roots of the fœtid and green hellebores for those of the black, *H. niger;* but as their properties appear identical, no inconvenience arises from the substituting of the one for the other. Ten species are enumerated in Don's System of Gardening, natives of various parts of Europe.—G.

The leaves of the *Helleborus fœtidus* have an acrid, bitter, and nauseous taste; they are occasionally employed as a domestic vermifuge; but as fatal effects have sometimes followed their incautious exhibition, their use is attended with danger. * The *Helleborus fœtidus* is said by Dr Christison, on the authority of Buchner, to be the most poisonous of the genus. †

I have not met with any good analysis of the *H. fœtidus;* the medical and poisonous properties of this genus, and their chemical constitution, will be considered under the article *H. niger.*—J. D. M.

Officinal. Folia.

Dosis, *a* ℥ ss. *ad* ℥ i. Decocti; (℞ Foliorum ʒ ii. Aquæ lb. j.; Coque per horæ quartam partem, dein cola.)

* Duncan's Dispensatory, 361.

† Christison on Poisons, 742.

AMANITA MUSCARIA. *Fly Amanita.*

Class and Order, CRYPTOGAMIA FUNGI. Nat. Ord. FUNGI.

GEN. CHAR. Bursting from a *volva*; *Pileus* fleshy, generally warted; *Gills* crowded, nearly entire; *Stipes* mostly elongated, annulate or naked.

Amanita *muscaria*; pileus orange-red or brown, shining, at length nearly plane, the warts, gills, and stipes white; stipes annulate.

A. muscaria, *Persoon, Syn. Fung.* p. 253. *Hooker, Fl. Scot.* pt. ii. p. 19. *Greville. Fl. Edin.* p. 369. *Ejus. Scottish Cryp. Fl.* v. i. t. 54.

Agaricus muscarius, *Lin. Fl. Suec.* 1235. *Sowerby, Fung.* t. 286.

THIS elegant species is diffused throughout Great Britain, growing on banks, shady woods, and occasionally in open plains, sheep walks, or in damp meadows. The variety of places in which it grows, does not seem to induce the variations in colour, as it may be found growing in the same places of all shades, from cream-colour to the most intense and brilliant scarlet, sometimes coated as it were, with thick varnish, and at other times quite opaque; in rapidity of growth but few of this tribe exceed it. Some years ago, I gathered a beautiful specimen that was growing on Wimbleton common in Surrey, in the month of October, the pileus was about three inches in diameter. Not having a box with me, I put it into the crown of my hat, where it continued some hours. On my return home I removed it from the hat, and found it had expanded so much, as to be nearly of the diameter of the hat, and the stem, which had so far accommodated itself to circumstances, not being able to elongate, spread laterally so as to form a broad flat stipes. The present, which I cannot but esteem specifically distinct from the following species, *(A. verrucosa,)* is of much larger size, and never, as far as I have seen, assumes a green colour, as that often does; the taste of both is alike, being exceedingly pungent. Though the *muscaria* is used for the purpose of destroying flies, it is eaten by a variety of other insects. I have repeatedly eaten small quantities of the *muscaria* and *verrucosa*, and have always experienced the same effects from both; a burning sensation at the back of the throat, almost insupportable for a short time, but much relieved by drinking milk, though the peculiar sense of burning continued for six or eight hours.

The accompanying figures of *A. verrucosa* will suffice to point out the species; its places of growth, and effects when eaten being precisely those of *A. muscaria*, further description appears unnecessary.—G.

Numerous fatal accidents occur on the Continent, from the *Amanita muscaria* being eaten instead of the *A. cæsarea*, to which it bears a great resemblance. The following account is quoted by Orfila, from the Inaugural Dissertation of M. Vadrot.

W.H. Lizars Sculp.

Amanita muscaria 2. 3. 4. A. verrucosus 5. 6. Agaricus semiglobatus

Several French soldiers, near Polosk in Russia, ate a quantity of the *Amanita muscaria*, which they had mistaken for the *A. cæsarea*; four of them, men of strong constitutions, believed themselves safe from the bad effects which had already shown themselves in their companions, and therefore refused to take emetics. In the evening, however, the following symptoms set in; anxiety, sense of suffocation, burning thirst, severe griping pains; the pulse became small and irregular, and the body covered with a cold sweat, the lineaments of the countenance were changed in a remarkable manner, the nose and lips acquired a violet hue; violent tremblings came on, the abdomen swelled, and a profuse fœtid diarrhœa supervened.

These symptoms increased in violence, and the men were conveyed to the hospital; the extremities became cold and livid, they suffered excruciating pain, and were delirious; one died soon after his admission to the hospital, and the other three, before morning. On dissection, the stomach and intestines were found inflated by fœtid gas, their inner surfaces exhibited marks of inflammation, and there were numerous gangrenous patches; the liver was much swelled, and the gall-bladder filled with dark thick bile. * Several of the comrades of these soldiers, who had submitted at first to medical treatment, recovered, after much suffering.

Most of the poisonous fungi belong to the narcotico-acrid section of poisons, so that in the majority of cases, narcotism and violent irritation will probably be combined; in the above account symptoms of irritant poisoning preponderate. In a case mentioned by Dr Christison, where a man eat a large quantity of *Agaricus campanulatus*, pure narcotism was the result, and before he had concluded his repast he was seized with dimness of sight, giddiness, trembling, and loss of recollection. He recovered so far as to be able to go in search of assistance, but before he had proceeded 250 yards, his memory again failed him, and he lost his way. His countenance expressed anxiety, his pulse was slow and weak, he reeled and could not articulate. He became so drowsy that he could be kept awake only by constant dragging. Vomiting was produced by sulphate of zinc, and the drowsiness gradually went off. Next day he complained only of languor and weakness. †

The *Amanita muscaria* though so poisonous in France and most parts of Europe, is used in Kamtschatka and northern Russia, for producing intoxication. Its effects are similar to those produced by opium, the person feels happy, speaks and moves involuntarily. Its effects are often ludicrous; if a person completely under its influence wish to step over a straw, he takes a stride of sufficient extent, to clear the trunk of a tree; a talkative person cannot keep silence or secrets; and a musical person is constantly singing. ‡

It is only of late that the attention of chemists has been directed to the composition of the fungi; Vauquelin has found in the *A. muscaria* the following substances,—An animalized matter insoluble in alcohol; ozmazome; a fatty matter; the hydrocyanate, phosphate and sulphate of potass; a volatile acid liquid procured by distillation. §

Berzelius gives the following, as the general chemical constituents of the mushroom tribe; a crystalline fat; a semifluid fat of the consistence of butter; vegetable albumen; sugar of

* Orfila, Toxicologie Generale, ii. 430.

† Christison on Poisons, 774.

‡ Lindley, Introduc. to Nat. Syst. of Botany, 337.

§ Richard, Histoire Naturelle Medicale, 1.

mushroom; two animalized matters, one soluble in alcohol and in water, the other only soluble in water; fungates, boletates, phosphates, and acetates of potass and ammonia; fungine; and water. Some species contain gum and vegetable mucilage. Le Tellier has separated from several poisonous Amanitæ, a substance which he describes as alkaline, capable of forming crystallizable salts with acids; and highly poisonous; he has called it *Amanitine.** Fungine is somewhat similar to osmazome, and is nutritious.

In Germany Dr Reinhard has used the *A. muscaria* with success in paralysis, epilepsy, and in chronic catarrh, where there is muco-purulent expectoration. M. Paulet has also employed it as an application to cancerous and ill-conditioned ulcers. †

Murray, in his Apparatus Medicaminum has mentioned that benefit is to be derived from the use of this remedy in diseases of the skin, scirrhous tumours, and in epilepsy.—J. D. M.

AGARICUS SEMIGLOBATUS. Glutinous Agaric.

Class and Order, CRYPTOGAMIA FUNGI. Nat. Ord. FUNGI.

GEN. CHAR. *Volva* none; *Pileus* with gills beneath, differing in substance from the rest of the plant.

Agaricus *semiglobatus*; gills grey, mottled, from four to eight in a set, edge horizontal; pileus greenish-yellow, semiglobate; stipes pale buff.

A. semiglobatus, *Sowerby, Fung.* t. 248. *Fl. Lond.* ed. 2, v. i. *Hooker, Fl. Scot.* pt. ii. p. 23. *Greville, Fl. Edin.* p. 391. *Ejus. Scot. Cryp. Fl.* v. vi. p. 344.

Agaricus glutinosus, *Curtis, Fl. Lond.* 1st ed. v. ii. t. 144,

Agaricus virosus, *Sowerby, Fung.* t. 407. Figs. 3, 4, 5. t. 408. Figs. 12, 13, 14.

MUCH ambiguity exists with regard to the properties of the present species, and I have little doubt but that much of the difference of opinion is occasioned by the circumstances of soil and situation in which the specimens grow. I ate several gathered from the spot where those were procured which proved fatal to the family at Mitcham, only two or three days after the occurrence, as detailed by Mr Parrot in the London Med. and Phys. Journal, v. xx. without experiencing any other effect, than a slight burning sensation in the throat, and others had no other taste than what is common to our best mushrooms. My deceased relative, the late Mr Curtis, was a curious and close observer of this tribe of vegetables, and I regret his name of *glutinosous* has been changed, on account of the frequent inapplicability of the present name to the species, and his name being more likely to identify it. Much stress has been laid upon the globular or acuminated form of the pileus. Of this I can speak confidently, that a specimen with an acuminated pileus will often become flattened in the

* Traité de Chimie, vi. 247.

† Richard, Elemens d' Hist. Nat. Med. i. 268.

course of a day, and that I should rather depend upon the glutinous cap and stem, than to any character drawn from the shape; as in this tribe of plants their mode of growth and forms they assume, often depend upon casual circumstances, as a stone or other extraneous substance lying in their way, they will sometimes grow round it, or, if growing up between two stones, the shape they assume is that of the interstice from which they spring.

This species varies in size from half an inch to two inches in diameter, and from one to four or five inches in height; its usual colour is a dull dirty yellow-brown, becoming darker when moist; it is more gradual in decay than many others, and though it shrinks much, may be dried between paper like other plants.

It is an abundant species, growing in moist pastures, and often in great abundance, mostly singly, but occasionally in clusters; there is nothing acrimonius or disagreeable in its general taste, yet its apppearance will not recommend it to the lovers of mushrooms; and I cannot but doubt whether the fatal effects ascribed to this, do not belong to some other species—G.

The poisonous properties of *Agaricus semiglobatus* are not well ascertained; Mr Sowerby in the London Med. and Physical Journal, classes it among the poisonous fungi. Of its chemical or medicinal properties nothing is known.

The following is a list of the poisonous fungi taken from Orfila, * *Amanita muscaria, venenosa, alba, citrina, viridis; Hypophyllum maculatum, tricuspidatum, albocitrinum, rapula, sanguineum, crux melitensis, pudibundum, pellitum; Agaricus necator, acris, piperatus, pyrogalus, stypticus, urens, annularis.* In Dr Greville's paper on the esculent fungi of Great Britain, † much valuable information will be found with regard to the innocuous species of this tribe. J. D. M.

References to Plate 18.

Fig. 1. Amanita muscaria. Figs. 2, 3, 4, Amanita verrucosa. Fig. 5, 6, Agaricus semiglobatus.

MOMORDICA ELATERIUM. Wild or Spirting Cucumber.

Class and Order, Monœcia Monadelphia. Nat. Ord. Cucurbitaceæ.

Gen. Char. Male. *Calix* five-cleft; *Corolla* five-parted; *Filaments* five. Female. *Calix* five-cleft; *Corolla* five-parted; *Style* trifid; *Fruit* opening elastically.

Momordica *elaterium;* leaves cordate, sinuated, rough; fruit oblong, hairy, elastic at the base.

M. elaterium, *Lin. Sp. Pl.* 1435. *Willd.* iv. 601. *Woodville, Med. Bot.* v. i. p. 121, pl. 43.

This species is a native of the south of Europe, and is cultivated on account of its me-

* Toxicologie Generale, ii. 417-28 † Trans. Wernerian Society, iv. 339.

dical properties. It forms a low trailing vine; its root is annual, long, and fleshy; stems several, round, branching, thick, and rough, with coarse hairs, without tendrils; leaves on long footstalks, irregularly heart-shaped, sinuated, veined, the upper surface a deep green, paler beneath; flowers of both sexes growing in clusters; the male flowers on short footstalks, the female sessile on the germen; the whole plant beset with bristly hairs.

The cultivation of this plant is similar to that of the common cucumber, it is equally hardy, and readily produces its fruit, in the southern parts of Britain, without requiring shelter except in the seedling-state. The seeds should be raised on a hot-bed, and planted out early in the spring; they flower during the summer months, and produce ripe fruit in August and September, and sometimes later. The plants are very susceptible of cold, and are usually destroyed the first sharp frost. It derives its name of squirting or spirting cucumber, from the fruit detaching itself on the slightest touch from the footstalks, and discharging the seeds and pulp through the aperture where the footstalk was inserted. Has been cultivated in Britain since 1596.—G.

Elaterium is prepared by slicing the fresh fruit of the Momordica, and allowing the juice which exudes to remain for some time in an earthen vessel; the sediment which is deposited, is to be collected on a piece of fine linen, and gently dried. The Edinburgh College does not order this to be prepared by the apothecary, but the London and Dublin Colleges do. Dr Clutterbuck gives an excellent account of the mode of preparing this drug. * It is called an *Extract* in the London and Dublin Pharmacopœias, but it is not prepared as the other extracts are, and perhaps *Feculence* might be a more appropriate name for this, and other substances of a similar nature. The French prepare the extract by inspissating the filtered juice of the fresh fruit; thus the *Feculence*, the most active part, is thrown away. Elaterium, as prepared according to Dr Clutterbuck's process, occurs in small pieces of about the sixteenth of an inch in thickness, of a light greyish colour, porous, of a disagreeable smell, and of a bitter, mawkish, taste. In anasarca, much benefit is often derived from the use of this remedy; it causes copious watery evacuations from the bowels, and generally gives relief. It is not admissible where the patient is much reduced in strength, or where there is a tendency to diarrhœa.

The great uncertainty of the effects of Elaterium as a cathartic, and the probable dependence of this uncertainty on original differences in the quality of the drug, as well as on the occasional addition of impurities, render it an object of much consequence to determine what is its active principle, and how this may be separated in a pure state. Several attempts have already been made to attain this object,—among which it is only necessary for me to particularize the analysis of Dr Paris, first published in 1822. According to this analysis, the active principle of elaterium, which he terms *Elatine*, is a green, soft, inflammable matter, free of bitterness, insoluble in water, and soluble in alcohol and the alkalies. The action of this substance as a medicine was so violent as strongly to favour the idea of its being the active principle. But a variety of circumstances tend to throw doubt over the accuracy and completeness of Dr Paris's analysis. Among these, it might be sufficient perhaps to observe, that he operated on so small a quantity as ten grains only of elaterium,

* London Medical Repository, xii. 1.

—a quantity which could scarcely be expected to yield satisfactory results. But besides, in the physical and chemical characters of the substance procured by Dr Paris, the chemist must recognize a close resemblance to chlorophylle, and certainly no analogy with the active principles which have been discovered, both before, and since, in almost every plant possessing an action on the animal body.

On repeating Dr Paris's experiments on the same quantity which he employed, I found results differing materially from his. Of ten grains of apparently good elaterium he found four soluble in water;* but on repeating this, I found that water only dissolved two grains and nine-tenths. Of the six grains insoluble in water, he found only five-tenths were dissolved by alcohol;† while I found that alcohol took up two grains and two-tenths.

These discrepancies of result must have arisen from the very great difference which prevails, as will presently appear, between various specimens of elaterium. But on proceeding with the analysis, I remarked other more important differences.

When fifty grains of good elaterium were digested for twenty-four hours in distilled water at a temperature of about 200° F. they were found to have lost eleven grains. The infusion was of a light brown colour, and of an austere bitter taste, and appeared to contain a minute portion of gum, but no starch. On standing for some time, a few crystals of sulphate of lime were deposited. The residual quantity, amounting to thirty-eight grains, (one grain having been lost by adhesion to the filter, and other unavoidable circumstances,) was acted on by alcohol, s. g. 825, and was found to have lost ten grains. The alcoholic tincture was of a deep green colour, and a bitter, somewhat acrid, taste. On being evaporated to the consistence of oil, and allowed to cool, numerous masses of small spicular crystals were observed; these were separated, washed with sulphuric ether, and dried. The rest of the extract was boiled in *Aqua potassæ*, to free it from the *Elatine* or colouring matter, (terms I consider as synonymous,) which is soluble in alkalies. After standing for a few minutes, a small quantity of white crystalline matter fell to the bottom of the flask. The supernatant fluid was now decanted, and the crystals collected on a filter, and washed with sulphuric ether, to free them more completely from adhering colouring matter.

Having obtained an appreciable quantity of crystalline matter, I proceeded to examine its properties.

It is, as I have already stated, a white crystalline substance, of an extremely bitter and rather styptic taste, insoluble in water and the alkalies, soluble in alcohol, ether, and in hot olive oil, sparingly soluble in dilute acids. When procured in a state of purity, as by the process to be described presently, it forms microscopic rhombic prisms, striated on the sides, possessed of considerable lustre, and of a silky appearance when in mass. It is decomposed by the strong acids, forming with nitric a transparent yellowish gummy-looking mass, and with sulphuric, a solution of a deep blood-red colour, which I should rather think caused by adhering colouring matter. It is fusible at a temperature a little above that of boiling water, and at a higher temperature is dissipated in thick whitish pungent vapour, having rather an ammoniacal odour.

Considering this substance as the proximate principle of *elaterium*, I first named it *Ela-*

* Pharmacologia, p. 203. Exp. A.

† Ibidem, p. 204. Exp. D.

teria; but as its alkaline reaction is not by any means distinct, and it does not appear to exist in the crude drug in the form of a salt, as every one of the acknowledged alkaloids does,—I have since altered it to *Elaterine.*

The process which I at first followed for procuring *Elaterine* was that of washing the small crystals above-mentioned with sulphuric ether; this I found unmanageable, *as the sulphuric ether dissolves both the elaterine and colouring matter with great facility.*

The next process I tried was by boiling the alcoholic extract in *Aqua potassæ*; this also I found inconvenient and troublesome. The process I now follow is simple and economical. The alcoholic tincture is to be evaporated to the consistence of thin oil, and while still warm, is to be thrown into boiling distilled water; immediately a copious white crystalline precipitate falls, and increases in quantity as the liquor cools. This precipitate is the *Elaterine*, the *Elatine* remaining in solution. The *Elaterine* is then to be separated by decantation and filtration, and repeatedly washed with distilled water. In this state it is sufficiently pure for ordinary purposes and for medical use. If it be required perfectly pure, it is only necessary to repeat the solution in alcohol and precipitation.

I would propose the same process for all vegetable crystallizable principles insoluble in water, which either exist uncombined with acid, or which have been freed from such combination by an alkali, as the separation from colouring matter is more complete after one precipitation, than after repeated crystallization, from alcohol in the ordinary method. I have tried it with Strychnia, and found it completely successful. When cold water is used, the crystals are smaller, and do not possess lustre.

As elaterine appeared to me the active principle, I tried its effect on animals.

To one rabbit, I gave a tenth of a grain in the form of pill, which, at the expiration of twelve hours, produced little effect, except some tenderness of abdomen. Twenty-four hours after the first dose, I administered a second, in solution; in six hours afterwards, the animal appeared in great pain, having laborious breathing, and other symptoms of general inflammation. At eleven at night, thirteen hours after the second dose, and thirty-seven after the first, it died, having neither passed fæces nor urine during the whole period.

On opening the body some hours after death, the stomach was found nearly empty and much enlarged, with increased vascularity towards that pylorus; that orifice was contracted, and the whole mucous membrane was softer and more vascular than natural. The lungs were much inflamed, and in some spots transparent and pulpy. The rest of the viscera did not seem at all affected.

The next rabbit to which I gave elaterine had no evacuation for three days; at the end of which period I gave it a fifth of a grain, which proved fatal in two days. In the course of the second day it passed a considerable quantity of milky urine and some feculent matter.

The only morbid appearances were increased vascularity and thickening of the coats of the stomach, with softening of the mucous coat. The lungs were not so much altered as in the first rabbit, but were obviously inflamed to a considerable extent.

The effects on man are similar to those of elaterium itself, viz. increased secretion of urine, nausea, vomiting, and fluid stools.

To a person in perfect health a twentieth of a grain was given, which at the end of two hours produced vomiting, and copious dejections. In the Royal Infirmary it was tried by

Dr Christison in four cases, in doses of a tenth of a grain. In two of them, vomiting and purging were produced, in a third, griping, and in a fourth, no effect. In these cases, I attribute the uncertainty of its effects to its having been made up in the form of pill, as, from trials afterwards made by Dr Duncan in the clinical wards of that institution, with an acidulated solution, a twelfth, or even a sixteenth of a grain has been found a sufficient dose for an adult.

The formula which has been found to succeed most completely is the following :—

℞ Elaterinæ, gr. i. Alcohol ℥i. Acidi Nitrici, gtt. iv. Solve. Sumat *a* ʒss. *ad* gtt. xl. in aquæ Cinnamomi ℥ss.

In a case of anasarca, I had an opportunity of trying its effects, and found it at least a very useful purgative, the patient always expressing himself much relieved after its operation.

The following table gives a view of the different solubility of different specimens of elaterium, first in water, and then in alcohol, and of the quantity of elaterine contained in each :

Grs.	British Elaterium.	Soluble in water.	Soluble in alcohol.	Quantity of Elaterine.
200	No. 1,	53	44	30
	2,	50	43	Not estimated.
	3,	44	46	40
	4,	46	45	36
	5,	52	63	52
Grs.	French Elaterium.			
200	light colour.	94	17	Not correctly estimated.
	dark colour.	140	20	

The best specimen of the British elaterium contained nearly 26 per cent. of elaterine, and the worst, No. 1. about 15. The French elaterium, which I obtained through the kindness of Dr Duncan, did not appear to contain above 5 or 6 per cent. There is obviously, therefore, an extreme difference in the strength of this drug in its crude state ; so that it ought never to be administered in that form, especially considering that its active principle may be procured by so simple a process. *

About a month after the publication of the above paper, an article, by Mr Hennell, appeared in the Journal of the Royal Institution, in which he gives a process for preparing a crystalline matter from elaterium.—He says, " One hundred grains of good elaterium were digested in repeated portions of alcohol, (s. g. 820,) until it ceased to give out colour and taste. The tinctures were mixed, and, after distilling off part of the alcohol, the remainder was left to evaporate spontaneously. Crystals were obtained, mixed with a quantity of colouring matter ; this latter, I found, might be readily removed by sulphuric ether, in which it quickly dissolves, while the crystals are very sparingly soluble in that fluid. The whole mass was washed with two ounces of sulphuric ether, (s. g. 750,) in three portions, which removed the colouring matter, leaving numerous white distinct crystals. These were dried at a temperature of 212°, and weighed *forty grains.* The etherial solu-

* On the analysis of Elaterium, by J. D. Morries, Esq. Edin. Medical and Surgical Journal, April 1831.

Since the publication of the above paper, I have had frequent opportunities of trying the effects of Elaterine in disease, and in all cases in which the use of Elaterium was admissible, I have found *Elaterine* an advantageous substitute.—J. D. M.

tion was evaporated by a gentle heat; for I had found, by a previous experiment, that the temperature of 212, if continued for any length of time, destroyed the beautiful green colour which characterizes the substance dissolved by the ether. The resulting green extract weighed twenty-one grains. It had the characters of a resin." Mr Hennell in another part of his paper, says. " They (the crystals) may be considered as crystalline bitter principle. What (if any) are the medical properties of these crystals, I am not prepared to state." Again. " The green resin already mentioned, possesses all the properties of *Elaterium* in a concentrated form. A tincture, made in the proportion of three grains and a-half to an ounce, by measure, of alcohol, has been administered in two cases of dropsy, in St Bartholomew's Hospital, by my friend Mr Blackmore.

" To a woman, aged 40, labouring under ascites, ten minims were given without much effect; five or six hours after the first dose, twenty minims more were administered, which, in half an hour, produced nausea and sickness, and in the space of a few hours twelve copious and watery evacuations."

In the case of a stout young man, labouring under dropsy, " twenty minims of the tincture were given, which produced nausea and copious watery evacuations. The next day, ten minims more were given, with nearly the same results, and on the third day the purging had not entirely ceased. The secretion of urine did not appear to be increased. *

With regard to the chemical part of Mr Hennell's paper, I have to remark, that the crystalline substance must have been very different from that which I have named *Elaterine*, as its solubility in ether will prove; the substance described by me, is soluble to an almost unlimited extent in ether; that described by him, is only soluble to the extent of two grains in the ounce of that fluid. The specimen on which he operated, must have been richer in crystalline matter than any which I have yet seen, as he obtained forty-four grains from the hundred; while from the best specimens, I could procure only twenty-six grains from the same quantity; he obtained twenty-one grains of the colouring matter, or active principle, as he considers it; while from the same quantity, I could only procure eleven grains.

In the wards of the Royal Infirmary of Edinburgh, the green resinous matter was given in doses of one, two, and three grains, by Dr Christison, and by the late Dr J. Gregory, then physicians to that institution, and though every precaution was taken to insure its success, no effect whatever was produced. I would attribute the results obtained by Mr Hennell's friend, Mr Blackmore, to the colouring matter being combined with a proportion of the crystalline, which its mode of preparation renders extremely probable; that used by me was purified by solution in *aqua potassæ*, and by precipitation from its alkaline solution by acetic acid.†—J. D. M.

Officinal. Pepones.

Officinal preparation. Ext. Elaterii, *Lond. Dub.* Elaterium, *Edin.*

Dosis, *a* gr. $\frac{1}{4}$. *ad* gr. i. Extracti.

* Journal of the Royal Institution for May 1831, p. 532–34.

† In the Second volume of Dr A. T. Thomson's Materia Medica, which has arrived here, since the above article was at press, he states, that the colouring matter or green resin is an active cathartic when given in so minute a dose as the " ninety-sixth part of a grain."—J. D. M. (See article *Elaterium* in Dr T.'s work.)

Cicuta virosa

W. H. Lizars Sculp.

CICUTA virosa. Long-leaved Water Hemlock or Cowbane.

Class and Order, Pentandria Digynia. Nat. Ord. Umbelliferæ.

Gen. Char. *Calix* of five teeth, leafy; *Petals* obcordate, with an inflexed point; *Fruit* in pairs, roundish, contracted at the sides; *Carpels* with five, nearly plain equal ridges, of which the lateral ones are marginal; *Interstices* with single *vittæ*, which in the dry fruit are more raised than the ridges; *Seed* round.—*Hooker.*

Cicuta *virosa*; stalks round; leaves tri-pinnate; leaflets lanceolate, acute, serrated; umbels opposite the leaves; partial involucre linear, and very narrow.

C. virosa, *Lin. Sp. Pl.* 366. *Fl. Brit.* 322. *Engl. Bot.* t. 479. *Hooker, Br. Fl.* p. 129.

Root large, hollow and divided by transverse partitions into numerous cells; stalks three feet high, branched; leaves long, narrow, serrated, generally growing in threes, sometimes in pairs. The form of the leaves and root differ from all the other British Umbelliferæ. It is not of very common occurrence, but is occasionally found throughout this kingdom. It is probably one of the most virulent poisons produced by the British Flora, its deleterious qualities having proved fatal to men and kine, but horses, sheep and goats are said not to be injured by it. Another species, *C. maculata*, has been used in medicine as the *Conium maculatum*.—G.

Many fatal instances of poisoning with the *Cicuta virosa*, are on record. Orfila * quotes from Wepfer the following case. "*Mœder*, six years of age, accompanied by a child of eight, and by six little girls, eat some of the roots of the *cicuta*, which he took for parsneps. Soon after he experienced great anxiety, uttered a few words, lay down and made water; shortly after he became horribly convulsed, lost the use of his senses, and closed his mouth firmly; he gnashed his teeth, rolled his eyes, and blood was observed to flow from his ears. He had frequent hiccup, and made efforts to vomit, but was unable to open his mouth; he had severe pain in his joints, his head was bent back, and the opisthotonos was so violent that a little child might have crept under the arch formed between his back and the bed. When the convulsions had ceased he implored his mother's assistance; but though all means were used to revive him, his strength rapidly diminished, and he died in half an hour after the invasion of the symptoms. The abdomen and face became swelled after death; a degree of lividity appeared round the eyes; and a quantity of green froth flowed from the mouth for a considerable time. Of the other children who had eaten this plant, the child of eight years of age, who had taken a considerable quantity, died; the other six recovered after having experienced severe symptoms."

* Toxicologie Generale, ii. 318.

PLATE 19.

Metzdorff has related the particulars of the inspection of three cases which have proved quickly fatal with convulsions and vomiting. Nothing remarkable seems to have been found except great gorging of the cerebral vessels. *

The *Cicuta* is seldom used in medicine, but is said by some, to possess all the properties of the *Conium maculatum*, and to act with greater certainty in a smaller dose. Haller, and many other writers suppose this to have been the plant, by the juice of which Socrates was poisoned. †—J. D. M.

Reference to Plate 19.

Fig. 1, A flower; Fig. 2, An umbel with fruit; Fig. 3, A single fruit; Figs. 1 and 3, magnified.

SACCHARUM OFFICINARUM. *Sugar Cane.*

Class and Order, TRIANDRIA DIGYNIA. Nat. Ord. GRAMINEÆ.

GEN. CHAR. *Spikelets* in pairs, alternately sessile and pedicelled, hermaphrodite, one-flowered; *Glumes* two, coriaceous; *Flowers* hermaphrodite, valves two, transparent, shining, the lower one notched, or awned, surrounded at the base with silky hairs.

Saccharum *officinarum;* panicle loose; branches numerous, in whorls; glumes nearly equal, hairs short; leaves plane, smooth.

S. officinarum, *Linn. Sp. Pl.* p. 79. *Willd. Sp. Pl.* v. i. p. 381. *Woodville, Med. Bot.* v. iii. p. 535. *Hooker, Bot. Misc.* v. i. p. 95. pl. 26.

ROOT perennial, solid, jointed; stems many, growing from the same root, rising to eight, twelve, or more feet high, upright, round, smooth, leafy, jointed; leaves long, embracing the stem; panicle loose, erect, or slightly inclining, about two feet in length, calix of three valves, one-flowered; flowers small, two-valved, beset at the base with long silky hairs.

The sugar cane is a plant of the utmost importance, not only in medicine, but for economical purposes, and is the staple produce of the British West India Islands. In the East Indies it is also cultivated, but in Dr Roxburgh's Flora Indica, he says that in 1796 a new species, *S. Sinensis* was introduced from China, which promised considerable advantages over the *S. officinarum*, "particularly from its being so solid and hard, as to resist the forceps of the white ant, and the teeth of the jackal, two great enemies to East India sugar plantations. At the same time it bears the drought much better than the sorts in general

* Christison on Poisons, 735.

† Dictionnaire des Drogues, ii. 128.

cultivation, it produces a profitable crop even to the third year, while the common cane of India must be renewed every year; it is also said to yield juice of a richer quality."

Detailed accounts of the various kinds and the method of their cultivation, will be found in a paper by Dr Macfadyen, published in the Botanical Miscellany, also in Dr Roxburgh's Flora Indica. The common sugar-cane is considered to be a native of the East Indies, but Dr Roxburgh says, " where wild I do not know ;" it is, however, widely dispersed in the East Indies, China, and the West Indian islands. Eleven species are described in the Flora Indica.

Numerous plants of different families, produce sugar in greater or less quantity, and are accordingly cultivated in various countries for this substance. One of the most productive is the sugar maple of America, from which the sugar is obtained by wounding the tree and collecting the juice as it exudes, and evaporating it, and it may likewise be procured from the maple and sycamore of this country, but in small quantity, and inferior in quality; in France, carrot and beet-roots are cultivated for their saccharine juice; it is sometimes to be found in a crystalline form, and nearly pure, in the stems and roots of some of our native grasses; as the *Poa aquatica*, *Poa fluitans*, and *Catabrosa aquatica*. It is not a little remarkable that the British species of grass in which sugar is found in a crystalline form, are entirely aquatic; I first met with it in this state in *Poa aquatica*. The circumstance which led me to discover it, was, observing some swine eagerly rooting among mud and weeds that were thrown out of a water course. I remarked they greedily devoured the roots and stems of some species of grass, which induced me to examine the kind, which proved to be those of the *Poa aquatica*. The roots were large and succulent, but having been exposed to the action of the sun and air for some days, the outer parts of the stems and roots had become dry. I peeled one or two of these, and at the base of each leaf, and of the sheaths covering the root, I found some small transparent crystals, which were pure sugar. I obtained nearly half an ounce of these, and have since found that this plant, as well as the other two above named, which are the sweetest of our native grasses, if removed from the watery spots in which they constantly grow, and exposed to the action of the sun and air, produce small grains of sugar as before-mentioned. Several species of Fucus or sea-weed, also spontaneously exude sugar. The farinaceous parts of grain are capable of being converted into sugar, as is observable in the process of malting; the barley is spread upon a floor, then wetted and thrown into a heap. When natural fermentation commences, the grain, by the action of the water and increased temperature, begins to vegetate, and is then speedily dried in a kiln, which converts the fecula of the seed into a saccharine substance.

I mentioned under the article Solanum, that the fecula of plants is sometimes converted into gum, as in the instance there named of a potatoe. It is a curious but well-known fact that fecula, gum, and sugar, are capable of being converted from one to the other of these substances. In some plants, as in the common garden pea, the seeds contain a considerable proportion of sugar, which as the seeds advance to ripeness and the juices evaporate, is then converted into fecula. Sugar is highly nutritious, and those plants in which it most abounds, as numerous species of the Gramineæ, the carrot, beet, &c. are those which afford the greatest portions of sustenance to man as well as the inferior animals.—G.

The greater part of the sugar, which is consumed in Europe, is the produce of the *Sac-*

charum officinarum, and is imported from the West Indian Islands. A considerable quantity is also imported from the Mauritius, the Brazils, and the East Indies. Sugar is prepared thus;—To the fresh juice obtained by expression, a small quantity of quicklime is added, (about 1 part of lime to 800 of juice,) by this means, the free acid is saturated, and the mucilaginous and other impurities, which would impede the crystallization, separated. The juice thus treated, is then gradually boiled down to the proper consistence, and the impurities, which rise in the form of scum, removed. It is then cooled in shallow vessels. When cool it forms a soft mass, consisting of numerous small crystals, imbedded in a thick tenacious syrup, to free it from which it is put into casks, in the bottom of which holes are bored; through these the syrup gradually drains, and the sugar is left in the state called, *Raw* or *Brown sugar*. The syrup which drops, is used along with other refuse for making rum, and is, in its purest form, exported to Europe, where it is used for various domestic purposes. The refining of sugar is performed in Europe. The process is as follows;—The sugar to be refined, is dissolved in water heated by steam, it is then evaporated *in vacuo*, and put into moulds of a conical shape, with a hole in the apex; when the sugar has become solid, a small quantity of saturated syrup is poured on the base of the cone, this, in its passage to the apex, carries away any impurity which may be present, and is more economical than pure water, which was formerly employed; the latter part of the process, (that of washing the sugar with syrup,) is conducted in apartments heated to about 150° F. When dry, the sugar is removed from the moulds, and is sold as *Loaf* or *White sugar*. The evaporation *in vacuo*, and purification by saturated syrup, are modern improvements. A still further improvement has been lately suggested, and is at present under the consideration of Government. It is proposed, that the processes of crystallization and refining, shall be conducted in England, and that the juice shall only undergo boiling sufficient to allow of its being imported without undergoing fermentation.

During the war between this country and France, when the produce of our colonies was not allowed to enter hostile ports, the French and other continental nations employed the sugar of the Beet, *Beta vulgaris*, as a substitute for that of the cane; *Achard* was the first who tried it on a large scale, * and though he to a certain extent succeeded, yet the sugar prepared could not compete with that of the colonies; since that period, however, the manufacture of beet sugar has arrived at such perfection, that it equals in all its properties that of the cane.

Most fruits, and many vegetables, contain sugar variously modified; in the process of germination, it is formed in considerable quantity. In America, the maple-sugar, prepared from the juice of the tree itself, is used as a substitute for the cane-sugar, but it has a peculiar flavour, and does not possess so great a sweetening power.

In the East Indies, the natives prepare a sort of sugar from the juice of various species of palm; the juice is called toddy; and when fermented, is used as an intoxicating liquor: the sugar is called Jaggery, and is supposed by the native practitioners to possess considerable medicinal virtues. †

Sugar is not used in medicine in an uncombined form; ‡ but is extensively employed for

* Richard, Histoire Naturelle Medicale, i. 522. † Ainslie, Materia Indica, i.

‡ In surgical practice, loaf sugar finely powdered is occasionally used as a gentle escharotic.—J. D. M.

the purpose of covering the nauseous taste of some drugs; for ameliorating the acrimony of others; and for rendering another class miscible with fluids, with which they were previously incompatible. It is the base of lozenges; and in the state of sugar-candy or barley-sugar, is useful in colds where there is much irritation of the upper part of the larynx.

Sugar was not generally known in England till the year 1466, and it was then only used at feasts, and as a medicine. In the year 1580 it was imported from Portugal, to which it had been exported from the Brazils; it then began to be more commonly used; since that period, the quantity consumed has been gradually increasing, and in 1790, calculating the population of England at eight millions, each individual, on an average, consumed twenty pounds of this luxury. *

Sugar is altered by the action of acids. Strong sulphuric acid, when poured on it, acquires a black colour, and deposites a quantity of carbonaceous matter. When the acid is saturated with lime and evaporated, a sweetish bitter extract is formed; if this be boiled for a length of time with sulphuric acid, it is changed into grape sugar, or that kind which is formed by the action of sulphuric acid upon starch or rags. † By the action of nitric acid, sugar is converted into malic and oxalic acids. With arsenic acid, according to Elsner, sugar undergoes various changes of colour, and is converted into grape sugar. Muriatic acid acts nearly in the same way as sulphuric. Sugar combines with the salifiable bases. With potass, it forms a mass without sweetness, and insoluble in alcohol; on the addition of an acid, the sugar can be obtained in its original state, by the action of alcohol.

It also combines with several earthy and metallic salts. Sugar is soluble to an almost indefinite extent in boiling water; it dissolves in its own weight of water of 40° F. and in four times its weight of boiling alcohol. Sugar can be obtained in considerable quantity from grapes; a similar sugar is produced by the action of sulphuric acid on starch, and various vegetable matters; it does not possess nearly the same sweetening power with cane sugar, and it is apt to cause griping; it is not so soluble as cane sugar, and is not well suited for an aliment, though in times of scarcity, it might be used as a substitute. According to Berzelius's analysis, pure anhydrous sugar is composed of

Carbon,	-	44.99	Or	12 atoms of carbon
Hydrogen,	-	6.41		21 ——— hydrogen
Oxygen,	-	48.60		10 ——— oxygen

Crystallized sugar is composed of one atom of water and one of sugar. It has been analyzed by Prout, Gay-Lussac, and Thenard, and by Berzelius. Their results are as follow:

	Prout.	Gay-Lussac and Thenard.	Berzelius.
Carbon, -	42.85	42.47	42.225
Hydrogen, -	6.44	6.90	6.600
Oxygen, -	50.71	50.63	51.175 ‡

* Loudon, Encyclopædia of Plants, 74.

† Berzelius, Traité de Chimie, v. 244.

‡ Berzelius, Traité de Chimie, v. 242.

Or

12 atoms of carbon
23 ——— hydrogen
11 ——— oxygen.

Grape sugar, analyzed by Saussure and Prout, the latter of whom operated on that variety procured from honey, gave the following results:

	Grape sugar by Saussure.	Variety from starch.—Saussure.	Sugar from honey by Prout.
Carbon, -	36.71	37.29	36.36
Hydrogen, -	6.78	6.84	7.06
Oxygen, -	56.51	55.87	56.58 *

Sugar from manna by the same chemists:

	Saussure.	Prout.
Carbon,	38.53	38.7
Hydrogen,	7.87	6.8
Oxygen,	53.60	54.5 †

Sugar may be divided into the following classes:

1. Cane Sugar. *a.* Sugar from the cane itself. *b.* Sugar from the maple. *c.* From the beet. *d.* From various grasses, *Holci*, *Poœ*, etc.

2. Grape Sugar. *a.* From grapes. *b.* From starch and vegetable matters by the action of sulphuric acid. *c.* From honey. *d.* That obtained from the urine of diabetic patients. *e.* Sugar of milk.

3. Sugar of Mushroom, discovered by Braconnot, and contained in many species of Fungi.

4. Liquid Sugar. Contained in an immense number of vegetables; we are familiar with it in the form of molasses or treacle, which most chemists look upon as deriving its sweetness, from liquid sugar contained in the juice of the cane, and not depending on the quantity of crystallized sugar which it contains. A sugar of this sort exists in honey.

5. Sugar from Manna. *a.* From manna itself, (Mannite.) *b.* From the leaves of various plants, celery, etc. *c.* From fermented honey. *d.* From fermented beet juice.

6. From the liquorice root. *a.* From *Glycyrrhiza glabra*, (Glycyrrhizine.) *b.* From the *Abrus precatorius*. *c.* From *Polypodium vulgare*.

Many other varieties might be enumerated, but these seem to me the principal.

Molasses or *Treacle* is the empyreumatic syrup which drains from the sugar during its first and subsequent crystallizations; it is of a pleasant subacid sweet taste, and is extensively used for various domestic purposes. In pharmacy it is employed for making several syrups; it is in itself gently laxative, and expectorant, and is a common domestic remedy in the form of what is called a "treacle posset," in colds, febrile attacks, and many of the milder diseases of children.

* Berzelius, Traité de Chimie, v. 250. † Ibidem, 255.

Under the articles *Hordeum* and *Triticum*, the vinous and acetous fermentations will be treated of.—J. D. M.

Officinal. Stipulæ.

Officinal Preparations. Syrupi Omnes.

Sugar, as an article of diet, is nourishing; and it is observed that the negroes get fat during the cane harvest. About lb. j. in the course of the day would be sufficient to support life.

CEPHAELIS IPECACUANHA. Ipecacuanha.

Class and Order, PENTANDRIA MONOGYNIA. Nat. Ord. CINCHONACEÆ.

GEN. CHAR. *Calix* four-toothed; *Flowers* in a dense involucrated head; *Corolla* funnel-shaped; *Tube* hairy, limb five-parted; *Stamens* five, included; *Stigma* bifid; *Drupe* two-seeded.

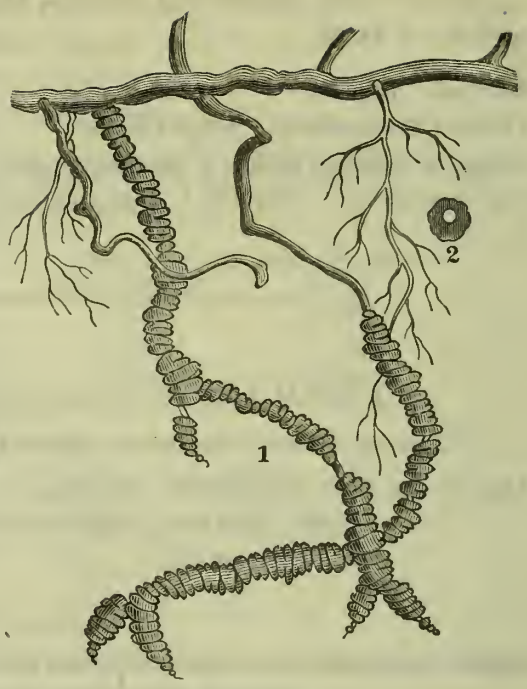
Cephaëlis *Ipecacuanha;* stems sub-herbaceous, procumbent; leaves lanceolate, smooth; heads axillary, pedunculated, few-flowered; bracteas large.

C. Ipecacuanha, *Willd. Sp. Pl.* v. i. p. 977. *Sprengel Syst. Veg.* v. i. p. 747.
Callicocca Ipecacuanha, *Brotero in Trans. Lin. Soc.* v. vi. p. 137. pl. 140.
Ipecacuanha, *Woodville, Med. Bot.* v. iii. p. 562.

THE Ipecacuan is a dwarf, almost herbaceous plant, with long straggling roots, or rather the stems are prostrate, and throw up occasionally a short stalk with a few rather large, oval, pointed leaves, the inflorescence terminal. From these creeping stems, grow two kinds of roots, one simply fibrous, the other knotty or granulated, growing either singly or in fasciculi. These latter do not appear to possess the power of reproduction, whilst cuttings from the stems that have fibrous roots attached, grow readily. It is a native of low damp woods and forests in Brazil, and was long unknown in this country, though the drug had been in use for more than two centuries. Dr Woodville's figure, which was published in 1793, was drawn from a specimen preserved in spirits, and communicated to Sir Joseph Banks, from Brazil, but as it was without inflorescence, its genus could not be determined, and it consequently has been referred to various genera.

A variety of plants are endued with emetic properties, but we are unacquainted with any one on which so much reliance can be placed as to its effect, as the Ipecacuan. This circumstance naturally creates a large demand, and subjects it to numerous adulterations, the most common of which is its mixture with some species of Ionidium, and occasionally with the roots of other plants. The true drug may be known by its colour and odour, particularly if moistened, likewise by its granulated form. The other roots which are known in the shops as the black or white ipecacuan, have the bark of their roots either only cracked, or some-

times with deep fissures, but not adhering in separate knots or joints as in the roots of the Cephaëlis, and a transverse section of each shows, as in the annexed figures, a difference in their internal structure. Ipecacuan. when good, should be moderately dry, with a grey or ash-coloured bark, having a resinous appearance, both internally and externally; the substance of the roots should be a pale whitish brown, becoming darker when moistened, and giving out its peculiar odour. It is not so heavy as the roots of the Richardsonia, but heavier than either the Psychotria or Ionidium. The knotty parts of the roots are those possessed of the most active properties, and the fibrous ones should be rejected. Figure 1. on the annexed cut represents the officinal part of the plant; figure 2. a transverse section of the root, showing the cortical and woody parts.



In the second volume of Elements of Materia Medica, by Dr A. T. Thomson, is figured the root of *Cephaëlis Ipecacuanha*, which differs materially from the specimens that have fallen under my notice, having the annular portions of the root in many parts angular and pointed, as also in having a simple fibrous root growing out of the jointed one, a deviation from its usual mode of growth, which, if correct, disproves the opinions entertained by other authors, that the two kinds of root are always distinct, and that it is only the fibrous portions that will grow after being separated from the parent stock.

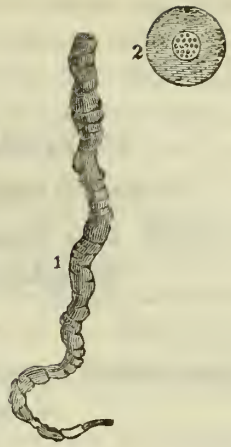
Of the *Psychotria emetica* in the same work, at page 216, the cut does not present a representation that would have induced me to refer it to this species; the annexed, in page 76, was drawn from specimens in the Materia Medica museum in the Edinburgh College.

The smaller figure at the bottom of the same page, is very similar to the root of *Ionidium emeticum*; the larger one copied from Von Martius I am entirely unacquainted with. The woody part is very much less than that of *Richardsonia emetica*, and the annular divisions of the root are more evident than in any specimens there seen.

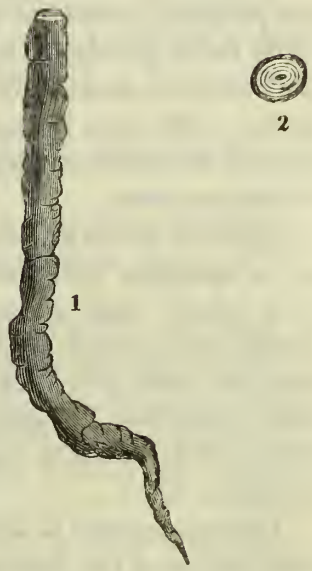
Though not contained in the Pharmacopœias of this kingdom, I shortly mention a few other species of plants that possess emetic properties in considerable force, and which deservedly hold a place in the Materia Medica of other nations. In the natural family of Violariæ, the roots of all the annual and herbaceous kinds are emetic, and of the genus *Viola* several of our native species, particularly *V. odorata*, prove emetic in small doses, and in large ones are to be regarded as active poisons.

Four or five species of Ionidium are used as substitutes for the true Ipecacuan, and the roots of some so nearly resemble those of the Cephaëlis that it requires considerable discrimination to select the one from the other. In the annexed sketch I have represented the

root of *I. Ipecacuanha*, *Viola Ipecacuanha*, Linnæus, which often becomes knotty, and then bears a close resemblance to the true drug; but it will be observed, in the magnified section, that the woody thread or pith is cellular, of a loose substance, and is quite soft, while in Cephaëlis, Richardsonia, and Psychotria it is hard, compact, woody, and without cells. The Ionideæ are less active than Cephaëlis or Richardsonia, but more so than Psychotria. In South America the roots of the Ionidium are indiscriminately used with, and are known by the name of Ipecacuanha; it is probable their activity may depend upon some volatile principle that is either lost or deteriorated by the process of drying. The figure represents the root of *I. Ipecacuanha*, of the natural size, figure 2. a magnified section of the same, showing the cellular pith.



Richardsonia rosea, *scabra* and *emetica*, are powerfully emetic, and are but little inferior to the Cephaëlis; the roots bear no great resemblance to true Ipecacuan, being internally white, with a comparatively large medullary thread, composed of a series of concentric rings, and possess a resinous appearance, externally as well as internally, and are of a harder texture than the common Ipecacuan. *R. emetica* is represented on the annexed page, figures 1 and 2, and is commonly known as White Ipecacuanha.



Besides the foregoing, numerous other species are powerfully emetic; the larger number of plants in the families Asclepiadeæ and Apocyneæ, are used medicinally, as *Cynanchum tomentosum*, *Periploca emetica*, *Diplolepis vomitoria*, &c. &c. and among the Cinchoneæ, those species which have been removed from the genus Cinchona, and form that of Exostemma, some kinds are powerfully emetic.

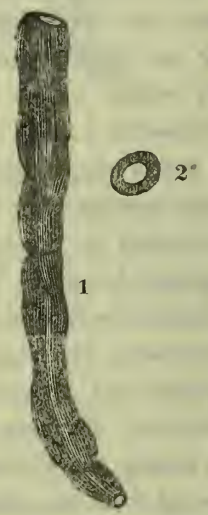
PSYCHOTRIA EMETICA. *Black Ipecacuanha.*

Class and Order, PENTANDRIA MONOGYNIA. Nat. Ord. RUBIACEÆ.

GEN. CHAR. *Calix* five-toothed, coronated; *Corolla* tubular; *Berry* globose, seeds two, hemispherical, sulcated.—*Schreb.*

Psychotria *emetica;* plant herbaceous, procumbent; leaves lanceolate, smooth, stipules awl-shaped; heads axillary, pedunculated, few-flowered.

THIS genus, of which upwards of 90 species are enumerated, are principally confined to the warmer parts of the East and West Indies, growing in woods and shady places, particularly the herbaceous species. Numerous kinds possess emetic properties. The genus has been separated by recent authors and many of the species are distributed into other genera, or formed into new ones.



Psychotria emetica is more feeble in its effects, but similar in its operations with *Richardsonia emetica;* the roots are of a grayish black exteriorly, the woody part lighter coloured, but it is much greater in proportion than in the true drug, by which, as well as colour, it is readily distinguished from Cephaëlis or Richardsonia, and by its compact pith from the Ionidium. From its colour it is denominated Black Ipecacuanha.—G.

The various modes in which Ipecacuan acts on the system render it one of the most valuable articles of the Materia Medica.

In an uncombined form it acts, 1*st*, as an emetic; 2*dly*, as a tonic.

1. As an emetic, it is useful in all cases of poisoning where we wish to evacuate the stomach by causing vomiting; in poisoning with opium, it is preferable to all other emetics, as it neutralizes to a certain extent the narcotic influence of that substance, and as it has been known to succeed in evacuating the stomach, where sulphate of zinc and other more powerful emetics had previously failed. Dr Duncan says, " It (Ipecacuan) has frequently succeeded in stopping intermittent fevers, when given about an hour before an accession was expected, and also when given so as to produce vomiting at the time of an accession, or at the end of the cold stage." And again, " In continued fevers, we have never seen more decidedly beneficial effects from the use of any medicine whatever, than from the exhibition of ipecacuan in the primary stage of typhus fever. An emetic, succeeded by diluent dia-

phoretics, when administered sufficiently early in the disease, very frequently cuts it short; and when it fails in this desirable object, it always has a beneficial influence on the progress of the fever." * In that variety of *Cholera spasmodica* in which gruelly diarrhœa and febrile symptoms precede the cold stage for some hours, or even days, I have seen the disease cut short by the exhibition of an emetic dose of Ipecacuan; but so difficult in these cases was it to produce vomiting, that I have given, in less than two hours, three drachms in divided doses, each dose being combined with an equal weight of mustard, before full vomiting was produced. In no case, in which full vomiting was produced early in the disease, did death ensue, and in most, the symptoms gradually disappeared, without even an approximation to the cold or blue stage. Other remedies were used after the action of the emetic, but the treatment did not require to be so active, nor to be so long-continued, as in cases in which no emetic had been administered.

The common emetic dose, for an adult, is from a scruple to half a drachm, in a tea-cupful of hot water. Warm diluent drinks ought to be given, to promote the evacuation of the stomach.

2. As a tonic, Ipecacuan is often successful in restoring the healthy action of the stomach and intestines in dyspeptic habits, which have resisted the more common remedies of this class. One grain given twice or thrice a-day, and gradually increased to two or three grains, will be found to agree with most constitutions.

Combined with opium, Ipecacuan is known by the name of *Dover's powder;* it acts 1*st*, as a diaphoretic; 2*dly*, as an astringent.

1. *Dover's powder* is one of the best diaphoretics we possess; in rheumatism and in slight febrile affections, no remedy is more generally efficacious. Its dose, when given with the intention of causing diaphoresis, is from ten to twenty grains.

2. As an astringent, *Dover's powder* has been lately much employed for the cure of diarrhœa and dysentery. Even after the failure of *catechu*, *kino*, &c. chronic diarrhœas are often stopped by this medicine, and besides its astringent property, it seems to restore in a great measure the healthy secretion of the intestines. In Cholera spasmodica, *Dover's powder* has been given with the happiest effects, in doses of five or six grains, repeated three or four times in twenty-four hours.

Combined with squill and other expectorants, Ipecacuan, in doses of one or two grains, increases their power. Since the introduction and improved preparation of the *Muriate of Morphia* by Dr W. Gregory of Edinburgh, lozenges, composed of that substance in union with ipecacuan, have come into general use; and from the very good effects which have almost invariably resulted from their exhibition, they bid fair to cut out every other domestic pectoral remedy.

In the year 1817, Pelletier discovered in Ipecacuan an alkaloid, to which it owes its emetic properties; to this he gave the name of *Emetine.* † He found it in quantities corresponding to the strength of the Ipecacuan. In what he calls the *Psychotria emetica*, but which M. Richard, who afterwards verified his analysis, has stated to be the *Cephaëlis Ipecacuanha*, he found

* Dispensatory, 376.

† Journal de Pharmacie, iii. 157.

In the cortical part.		In the woody fibre or central part.	
Emetine, - -	16.	Emetine, - -	1.15
Odorous fatty matter, -	2.	Fatty matter, - -	a trace.
Wax, - -	6.	Wax, - -	
Fœcula, - -	42.	Gum, - -	5.
Gum, - -	10.	Fecula, - -	20.
Woody fibre, - -	20.	Woody fibre, - -	56.60.
	——	Extractive matter not emetic,	2.45.
Total,	100.	Loss,	4.804.80.
		Total,	100. *

The *Psychotria emetica* contains

Emetine, - -	9.
Fatty matter. - -	12.
Lignine, gum, and fecula, -	70.
	100.

Emetine acts in the same way on the animal economy as Ipecacuan. It is a good deal used in France, but very rarely in this country.

The root of the *Viola odorata* contains, according to Boullay, a crystalline principle analogous to *Emetine*, † but differing in some of its physical properties. Both *Emetine* and *Violine* are poisonous in large doses. ‡—J. D. M.

Officinal. Radices.

Officinal preparations. Pulvis, *Lond. Edin. Dub.* Pulvis Ipecacuanhæ Compositus vel c. Opio, *Lond. Edin. Dub.* Vinum Ipecacuanhæ, *Lond. Edin. Dub.*

Dosis, *a* ℈ i. *ad* ʒ ss. Pulveris Simplicis, pro Emetico; *a* gr. x. *ad* xx. Pulveris Compositi, pro Diaphoretico; et *a* ʒ ss. *ad* ʒ i. Vini, pro Emetico.

* Dictionnaire des Drogues, iii. 260.

† Dictionnaire des Drogues, iii. 264–369.

‡ Toxicologie Generale, i. 498.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Ethusa cynapium

ÆTHUSA Cynapium. Fools Parsley.

Class and Order, Pentandria Digynia. Nat. Ord. Umbelliferæ.

Gen. Char. *Calix* obsolete; *Petals* obcordate, with an inflexed point; *Fruit* ovato-globose; *Carpels* with five, elevated, thick, acutely carinated ridges, the lateral ones marginal and a little broader, bordered by a somewhat winged keel; *Interstices* with single *vittæ*; *Seed* semi-globose.—*Hooker.*

Æthusa *cynapium;* leaves uniform, leaflets wedge-shaped, decurrent, with lanceolate segments.

Æ. Cynapium, *Lin. Sp. Pl.* 367. *Fl. Brit.* 323. *Engl. Bot.* 1192. *Fl. Lond.* ed. 2. v. ii. *Hooker, Br. Fl.* p. 122.

Root annual, stem one or two feet high, upright, branched, slightly grooved, hollow, covered with a bluish meal, which easily wipes off; leaves smooth, shining, of a deep green on the upper side, beneath paler and shining; sheaths of the foot-stalks small, smooth and membranous at their edges: the partial involucrum placed externally, and only surrounding one-half of the umbel, composed of three long, linear, pendulous leaves.

This species, which grows commonly in gardens and in waste places, has a considerable resemblance to the common parsley, likewise to the hemlock; from the former it is easily distinguished by its unpleasant odour; and from the latter, by its stems being without spots, and the three pendulous leaflets of its involucrum.—G.

The *Æthusa cynapium* is a very active poison, and many fatal accidents have occurred from its having been eaten instead of parsley. Orfila mentions several cases of poisoning, among these,—one, of a child that ate a quantity of the leaves, and though it vomited them, became delirious, and supposed it saw dogs and cats; it was not seen by a medical man till next day, but it recovered. The same treatment which has been recommended under the head of *Œnanthe*, ought to be adopted.

Ficinus asserts that there exists in this plant, a poisonous organic principle, to which he has given the name of *Cynapine.* According to him, it is soluble in water, and in alcohol, insoluble in ether; it crystallizes in rhombic prisms, and forms a crystallizable salt, (also prismatic) with sulphuric acid.* Berzelius classes this under the head of vegetable alkaloids, the existence of which is doubtful.—J. D. M.

References to Plate 21.

Fig. 1. Partial three-leaved involucrum; Fig 2. A flower; Fig. 3. A stamen; Fig. 4. Fruit; Fig. 5. A seed; Fig. 6. Seed cut through showing the embryo.

* Berzelius, Traité de Chimie, v. 188

PLATE 21.

DAUCUS Carota. *Wild Carrot.*

Class and Order, Pentandria Digynia. Nat. Ord. Umbelliferæ.

Gen. Char. *Calix* of five teeth; *Petals* obcordate, point inflexed, the outer often radiant and deeply bifid; *Fruit* dorsally compressed; *Carpels* with five primary *ridges*, filiform and bristly, of which the three intermediate ones are dorsal, the two lateral ones on the inner face; the four *secondary ridges* equal, more prominent, with one row of prickles, which are slightly connected at the base; *Interstices* under the secondary ridges, with single *vittæ*; *Seed* plane in front; Universal and partial involucre many leaved, the former often primary.—*Hooker.*

Daucus *Carota;* bristles of the seed slender; leaves tripinnate; leaflets pinnatifid, segments linear-lanceolate, acute; umbels with a solitary coloured abortive flower in the centre.

D. Carota, *Lin. Sp. Pl.* 348. *Fl. Brit.* 300. *Engl. Bot.* t. 1174 *Woodville, Med. Bot.* v. iii. p. 443. *Hooker, Br. Fl.* p. 114.

The carrot in its wild state has a long tapering woody root; but by cultivation has been so altered, as to become the succulent root, so well known and esteemed for culinary and domestic purposes; it is found abundantly in pastures, borders of fields, and in hedge banks, and most abundantly on the sea coast. The whole plant is of closer growth, and much rougher in its wild state, than when under cultivation; the *D. maritima* is of a smaller size, with broader and more fleshy leaves, but both kinds vary so much, that they can hardly be considered as distinct species. Loudon enumerates fifteen species, besides three varieties of the cultivated kind, of which two only are natives of this country.

Carrots abound in saccharine juice, and in France are used for the purpose of extracting their sugar. They are considered as by far the most nutritive of our esculent roots, for mankind as well as animals, and are by many considered as affording to horses and kine, equally substantial support as grain. A considerable variety are now cultivated, but generally those of a clear deep colour are more saccharine and better adapted for the table than the paler kinds.—G.

The Seeds of the carrot are stimulant and diuretic, but are seldom prescribed. The roots when boiled and beaten to a pulp, form an excellent poultice for foul and cancerous sores; the pain and irritation are diminished, and the fœtor nearly destroyed during their application. According to Wackenroder, the expressed juice of the root contains crystallizable and non-crystallizable sugar; starch; extractive; gluten; albumen; a crystalline colouring matter *(Carotine)*; volatile and fixed oil; pectic and malic acids; and various salts. The *Carotine* is obtained thus: when the juice is exposed to a heat of about 200° F. a coagulum is formed, consisting of fixed oil in combination with the carotine, and of albumen. This coagulum is to be acted on by ether, which dissolves the oil and carotine; the etherial solution is then to be evaporated, and the residuum washed with caustic ammonia, which dissolves the oil and leaves the *Carotine*, which is obtained in a state of purity by re-solution in ether and spontaneous evaporation. If any oil adhere to the *Carotine*, it is to be separated by pressure between the folds of blotting paper. *Carotine*, when pure, crystallizes in small, oblique, four-sided tables, of a ruby-red colour, insoluble in acetic acid and in alkalies; sparingly soluble in alcohol; easily soluble in the oils and fats, communicating to them a deep orange colour. * From the quantity of pectic acid which carrots contain, they are commonly employed for its preparation.—J. D. M.

Officinal. Radix et Semina.
Dosis, *a* ℈i. *ad* ʒi. Seminum.

FŒNICULUM VULGARE. Common Fennel.

Class and Order, PENTANDRIA DIGYNIA. Nat. Ord. UMBELLIFERÆ.

GEN. CHAR. *Calix* obsolete; *Petals* roundish, involute, narrower apex obtuse; *Fruit* nearly round; *Carpels* with five prominent obtuse-keeled ridges, of which the lateral ones are marginal and a little broader; *Interstices* with single vittæ; *Seed* subsemiterete; *Universal* and *partial involucres* wanting.

Fœniculum *vulgare*; leaves biternate, leaflets linear, filiform, pinnatifid, segments awl-shaped. *Hooker, Br. Fl.* p. 122.

Anethum Fœniculum, *Lin. Sp. Pl.* 377. *Fl. Brit.* v. 1. p. 329. *Woodville, Med. Bot.* v. iii. p. 441. *Engl. Bot.* t. 1208.

FENNEL is a common plant on various parts of our coasts, particularly in chalky districts, and it is frequently met with amongst rubbish in the vicinity of towns; it has a tapering, fibrous, perennial root, which descends deep into the soil. Stems several, round, channelled,

* Berzelius, Traité de Chimie, vi. 187.

much branched, of a beautiful glaucous green, growing to the height of three or four feet; leaves much divided, the segments very slender; flowers of a full greenish-yellow. This species is very generally cultivated for culinary purposes, but the seeds, which are the officinal part, are usually imported from the south of Europe, and are known in the shops as Sweet Fennel seeds, the *Fœniculum dulce* of the British Pharmacopœias. The plant when cultivated acquires a milder taste and smell than it possesses in its wild state.—G.

The seeds of the Fennel, like those of many other umbelliferous plants, are aromatic and carminative. They owe these virtues to the quantity of essential oil which they contain. About ℥viii. of oil are obtained from lb. xxv. of the seeds.—J. D. M.

Officinal. Semina.

Officinal preparations. Oleum Essentiale, *Dub.* Aqua Distillata, *Lond. Dub.*

Dosis, *a* gtt. iv. *ad* viii. Olei; et *ab* ℥i. *ad* ℥iv. Aquæ Distillatæ.

PIMPINELLA ANISUM. Anise.

Class and Order, Pentandria Digynia. Nat. Ord. Umbelliferæ.

Gen. Char. *Calix* obsolete; *Petals* obcordate, with an inflexed point; *Fruit* laterally contracted, ovate, crowned with the swollen base of the reflected styles; *Carpels* with five filiform equal *ridges*, of which the lateral ones are marginal; *Interstices* with many *vittæ*; *Seed* gibbous, plane in front; *Universal* and *partial involucres* wanting.—*Hooker.*

Pimpinella *Anisum;* radical leaves three-lobed, cauline ones narrow, acutely laciniated.

P. Anisum, *Lin. Sp. Pl.* 379. *Woodville, Med. Bot.* v. iii. p. 490.

Root annual, tapering; stem branched, smooth, striated, one foot to eighteen inches high; root leaves on longish channelled footstalks, of a somewhat roundish form, deeply divided into three or more lobes; cauline leaves becoming narrower upwards, divided into slender pinnated segments; flowers white, small, in terminal umbels.

Anise is a native of Egypt, but is cultivated in the southern parts of Europe, whence it is imported into Great Britain; it is sufficiently hardy to bear our climate, but is not grown in sufficient quantity to supply the demand; was introduced into Britain in 1551.

Anise-seeds are extensively used to flavour a spirituous cordial, known by the name of Anise-seed, and are possessed of a powerful scent, which has so fascinating a power on dogs that the oil is often employed for the purpose of decoying them away.—G.

The volatile oil which is procured from the anise-seed by distillation is powerfully excit-

ing, and in a large dose is capable of causing delirium. * The carminative properties of this oil are of a very high order, and we find it much used along with oil of caraway in the colic of children. A celebrated empirical preparation, sold under the name of "Dalby's carminative," is supposed to owe its virtues to these oils united with water by means of magnesia. Expectorant properties are attributed to this oil.

Some years ago, the late Dr Duncan discovered that the oil of Anise consisted of two portions, one, which froze at about 40°, and another which resisted a much lower temperature. Since that period, most volatile oils have been found to consist of two portions, to which the names of *Stearoptine* and *Eleoptine* have been given, the former corresponding to the *stearine*, the latter to the *elaine* of fixed oils and fats. From the oils of Anise and Fennel these substances can be very easily procured in their separate forms. For further information on this subject, see Berzelius, Traité de Chimie, vol. v. p. 401, 402.—J. D. M.

Officinal. Semina.

Officinal preparations. Oleum Volatile, *Lond. Edin. Dub.* Spiritus, *Lond.*

Dosis, *a* gtt. iii. *ad* v. Olei; et *a* ℥ss. *ad* ℥i. Spiritus.

COCHLEARIA ARMORACIA. Horse-radish.

Class and Order, TETRADYNAMIA SILICULOSA. Nat. Ord. CRUCIFERÆ.

GEN. CHAR. *Pouch* oval or globose, many-seeded, valves ventricose; *Seeds* not margined; *Calix* spreading; *Petals* entire; *Stamens* without teeth.

Cochlearia *armoracia*; pouch oblong, stigmas dilated, nearly sessile, radical leaves oblong, on long footstalks, crenate, cauline ones lanceolate, serrated or entire.

C. armoracia, *Lin. Sp. Pl.* 904. *Fl. Brit.* 690. *Engl. Bot.* t. 2323. *Woodville, Med. Bot.* v. iii. p. 406. *Hooker, Br. Fl.* p. 298. *Don, Syst. Gard.* v. i. p. 187.

A HARDY perennial of rapid growth, much disposed to become a troublesome weed in gardens, and cultivated grounds, from whence it probably owes its introduction into the British Flora, though it is said to be found truly wild in some of the mountainous parts of England. It is of frequent occurrence amongst rubbish in uncultivated places, and as almost every part of the root will readily grow, it is easily established where any of the trimmings or cuttings of the root may be thrown. It is in much use in England as a condiment, and is largely cultivated for the table; its roots strike deep into the soil, and when once established, are by no means easy of extirpation.—G.

* Dictionnaire des Drogues, iii. 151.

The root of the horse-radish has an extremely pungent biting taste. An infusion is occasionally prescribed as a tonic in some scorbutic diseases, and in some varieties of dyspepsia, and very rarely in intermittents.

In Britain, horse-radish is chiefly cultivated as a culinary herb, but in France, it seems to be more esteemed as a medicine than as a condiment. Richard says that it is the most powerful, and the most active of antiscorbutics,* and the same statement is made in the Dictionnaire des Drogues†.—J. D. M.

Officinal. Radices.

Officinal preparations. Spiritus Armoraciæ Compositus; Infusum Armoraciæ Compositum. *Lond.*

Dosis, *a* ʒi. *ad* ℥i. Spiritus; et *ab* ℥i. *ad* ℥iv. Infusi.

ACORUS Calamus. Common Sweet Flag.

Class and Order, Hexandria Monogynia. Nat. Ord. Aroideæ.

Gen. Char. *Flowers* arranged upon a spadix; *Spathe* wanting; *Perianth* of six pieces, scales inferior; *Stigma* sessile; *Capsule* indehiscent, many-seeded. *Hooker.*

Acorus *Calamus*; ancipitate scape rising much above the spadix.

A. Calamus, *Lin. Sp. Pl.* 462. *Fl. Brit.* 373. *Engl. Bot.* t. 356. *Woodville, Med. Bot.* v. iii. p. 472. *Hooker, Br. Fl.* p. 159.

Root perennial, extending horizontally, scarcely beneath the soil, throwing out numerous fibres which become thickly matted together; leaves long, undulated on one side, sword-shaped; flowers inconspicuous, growing upon a spadix from the leaf-like scape. There is no other indigenous plant with which this species can be confounded.

The Acorus is by no means a common plant in Great Britain; but it is abundant in Norfolk, Suffolk, some parts of Kent, and was many years ago growing in great luxuriance on the spot where the House of Correction is now built, at Brixton, near London; it was also to be found at the same time on Hampstead Heath, but in both places is entirely eradicated: several stations are given for it in Scotland. Its usual places of growth are by the sides of rivers and in marshes, but it has succeeded very well with me when planted in a common border of the garden with a northern aspect. The root, which is the officinal part of the plant, is thick, internally white, externally yellowish green, of a spongy texture; it has an agree-

* Histoire Naturelle Medicale, ii. 656.

† Dictionnaire des Drogues, iv. 364.

able aromatic smell, and a warm pungent taste. The odour and taste are considerably increased by drying the root.—G.

The root of the *Acorus Calamus*, although seldom used either in this country or in France, is undoubtedly possessed of considerable power, as an aromatic and stimulant tonic; with this view, it is frequently used in Germany.*

Dr Thomson recommends it as an addition to Cinchona and Quinine. He says that he has found these remedies, when combined with the *Acorus*, succeed in curing fevers which had resisted their effects when uncombined with it. †

According to an analysis by M. Trommsdorf, the fresh root contains 1.0 volatile oil; ‡ 2.3 of soft resin; 3.3 of extractive, of a sweetish acrid taste, containing a little chloride of potass; 5.5 of gum, mixed with phosphate of potass; 1.6 of starch; 21.5 of woody fibre, and 67.7 of water. §—J. D. M.

Officinal. Radices.

Dosis, *a* ʒss. *ad* ʒii. Pulveris radicis.

ALLIUM SATIVUM. Garlick.

Class and Order, HEXANDRIA MONOGYNIA. Nat. Ord. LILIACEÆ.

GEN. CHAR. *Perianth* inferior, petaloid, of six ovate, spreading pieces; *Capsule* triquetrous.

Allium *sativum;* bulbs compound; stamens three-pointed.

A. sativum, *Lin. Sp. Pl.* 425. *Woodville, Med. Bot.* v. iii. p. 460.

ROOT perennial, formed of several bulbs enclosed in a common membrane; stem simple from one to two feet high; radical leaves numerous, long, plane, those on the stem few, and shorter than the others; flowers growing from a spathe, small, whitish green, intermixed with small bulbs: these latter, when the flowers are decayed, fall from the spathe and become new plants.

Garlic is a native of the southern parts of Europe, but is very generally cultivated for domestic and medicinal purposes. It increases rapidly by its roots, as well as being bulbiferous, but the seed is very frequently abortive. Its odour is powerful, and to most persons excessively offensive; the scent is, with perhaps the exception of *A. ursinum*, the most unpleasant of all the tribe, the numerous species of which have in a greater or lesser degree the same smell. One hundred and eighteen species are enumerated in our latest catalogue, seven of which are natives of the British Islands.—G.

Garlic is rarely prescribed internally in this country; it is occasionally employed as a

* Richard, Histoire Nat. Medicale, i. 306.

‡ Berzelius, Traité de Chimie, v. 407.

† Thomson's Mat. Med. and Therapeutics, i. 681.

§ Berzelius, Traité de Chimie, vi. 161.

stimulant cataplasm, but its disagreeable odour prevents its extensive use, as there are many equally efficacious rubefacients which are free of all unpleasant smell. A cataplasm of garlic applied to the pubes is said generally to succeed in procuring a discharge of urine, when the retention has arisen from want of due action of the bladder. *

Garlic is used as a condiment, and enters into many of the epicure's sauces ; in Spain, Portugal and Provence, the peasantry consume large quantities of it. The odour and rubefacient properties reside in an acrid essential oil, which is procured in the proportion of three-fourths of an ounce from twenty pounds of the root;† it is so acrid, that when applied to the skin, it causes almost immediate vesication.—J. D. M.

Officinal. Radices.

ALLIUM CEPA. *Onion.*

Class and Order, Nat. Ord. and Generic Character, see *A. sativum.*

Allium *Cepa ;* scape ventricose, longer than the round leaves.

A. Cepa, *Lin. Sp. Pl.* 425.

THE onion is too well known to require description. It possesses the properties of garlic in a milder form ; is extensively used as an article of diet, and acts as a gentle stimulant. An essential oil is procured from it, possessing nearly the same properties as that of garlic. ‡

With nitrate of silver, the juice of onions forms a yellowish precipitate. This circumstance was taken advantage of in a case of poisoning with arsenic, where the nitrate of silver was used as the test. The defender proved that onions give a somewhat similar appearance in a mixed fluid. On repeating this experiment, I found that the precipitate is not at all like the arsenite of silver, and the eye must be both incorrect and inexperienced that could for a moment confound them. The precipitate which is thrown down when nitrate of silver is added to onion-juice, is of a dirty, pale, yellowish-gray ; while the arsenite of silver is of a bright lemon-yellow.—J. D. M.

Officinal. Radices.

ALLIUM PORRUM. *Common Leek.*

Class and Order, Nat. Ord. and Generic Character, see *A. sativum.*

Allium *porrum ;* stamens tricuspidate ; root tunicated.

A. porrum, *Lin. Sp. Pl.* 425.

* Duncan's Dispensatory, 292.

† Berzelius, Traité de Chimie, vi. 162. Ibid. v. 425.

‡ Berzelius, Traité de Chimie, vi. 162. Ibid. v. 425.

The Leek is a well known culinary vegetable, approaching the onion in taste and other properties, and is extensively cultivated for domestic purposes, particularly in the northern parts of Europe, being hardier than most of the cultivated Alliums. It is a native of Switzerland.—G.

COCCULUS PALMATUS. Calumbo or Columbo Plant.

Class and Order, Diœcia Hexandria. Nat. Ord. Menispermeæ.

Gen. Char. *Sepals* and *Petals* in two series, rarely in three; *Stamens* six, free, opposite the petals; *Carpels* three to six; *Fruit* drupaceous, reniform, compressed, one-seeded; *Cotyledons* distant.—*De Candolle.*

Cocculus *palmatus;* leaves cordate at the base, deeply cleft into five or seven lobes; lobes quite entire, acuminated, covered with hispid hairs.

C. palmatus, *Decand. Syst. Veg.* i. p. 522. *Bot. Mag.* iv. (New Series) p. 2970 and 2771. *Don. Syst. Gard.* i. p. 106.

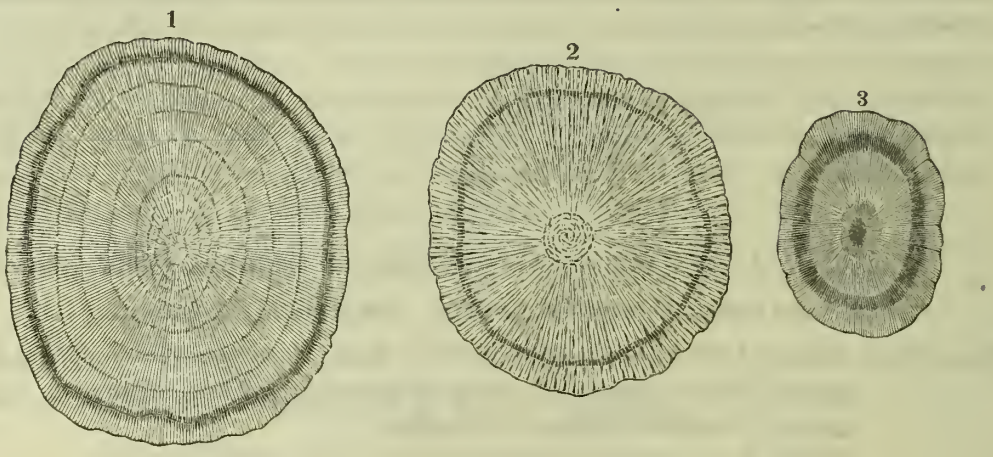
Menispermum palmatum, *Willd. Sp. Pl.* iv. p. 825. *Lam. Dict.* iv. p. 95.

Root perennial, thick, composed of a cluster of fleshy fusiform tubers growing from the parent root; stems annual, twining; leaves large, deeply divided into five or seven lobes; flowers growing in crowded spikes.

The plant producing the officinal columbo-root was long unknown in this country, but is now satisfactorily ascertained to grow in thick forests that are said to cover the shores about Oibo and Mozambique, on the eastern coast of Africa, and inland for about fifteen or twenty miles, where it was long kept secret by the Portuguese, who alone traded in the drug. The male plant had been obtained in 1805, and was cultivated in the Mauritius, but the discovery of the female plant is more recent. Specimens with drawings of both sexes were transmitted by Mr Telfair to Dr Hooker, who published them in the Botanical Magazine, plates 2970 and 2971.

Columbo root has been fraudulently imitated by slicing the roots of *Bryonia alba*, and when dry steeping them in a strong decoction of true Calumbo. The fictitious roots readily imbibe its colour and flavour, and that so completely, that specimens I prepared and gave to the late Dr A. Duncan could not be detected but by those well acquainted with the structure of the root. As will be observed in the annexed figures, besides the concentric circles, there are numerous radiating lines from the centre to the circumference, and whether the rings be numerous or only one, these lines are always present, and if the surface of the pieces under examination be cut smooth, the lines alone would detect the fallacy. In some

specimens of the finest quality the lines are broken as in figure 2, or quite entire, extending from the bark to the centre, as in figures 1, and 3.



The colour of the dry pieces of the root are of a tolerably bright yellow, becoming paler towards the middle. In one of Dr Hooker's figures the whole of the inner part of the root is represented of a full yellow. This is not the case in a root I have before me, where the depth of colour is confined to the first ring next the bark, gradually fading to almost white, but is dark or brownish in the centre. Some years ago, the demand for this drug induced numerous frauds; but the great reduction in its value, renders it now not worth the trouble of imitating.

The finest samples of the drug are of a bright yellow colour, becoming paler towards the middle, which is usually clouded. It should break short, and have a full but not unpleasant bitter taste, and be quite free from worm holes.—G.

Calumba belongs to the class of simple bitters. It is one of the most valuable we possess, and is much more grateful than most of its class. It is useful in dyspepsia arising from want of tone in the digestive organs, in chronic diarrhœas, and in cholera. In the last mentioned disease it ought to be combined with opium or morphia. In diarrhœa, the addition of a small quantity of chalk and rhubarb is advisable. Richard says, that it is but reasonable to attribute part of its efficacy in diarrhœa, dysentery, and obstinate vomiting, to the starch which it contains, and he therefore recommends the decoction in such cases, as the boiling water takes up the starch. He recommends the infusion as a simple bitter, as in it no starch is dissolved. * The presence of starch in the true, and the absence of it in the false Calumba, are pointed out as means of detecting adulteration; but this does not apply to the adulteration with the Bryony root, as starch exists in larger quantity in that plant than in the Calumba itself.

Wittestock found in the Calumba, a new crystalline principle to which he has given the name of *Calumbine*. He obtained it by subjecting the Calumba root to the action of boiling alcohol 835, and by distilling the alcoholic tincture to about a third, the *Calumbine* was de-

* Dictionnaire des Drogues, ii. 180.—The quantity of stareh contained in the decoction is so small, that but little effect can be attributed to it. M. Richard, in making this statement, appears to have refined a little too much.—J. D. M.

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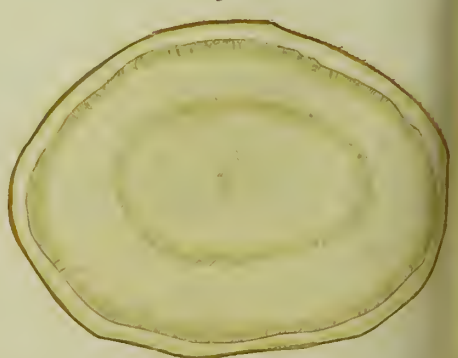

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Bryonia dioica.

posited in the form of four-sided prisms, with a rhomboidal base. He purified it by redissolving it in alcohol, and boiling with animal charcoal. It is inodorous, extremely bitter, soluble in alcohol, slightly so in ether and in water, soluble in the alkalies, precipitated from solution in them by acids, soluble in acetic acid. * A dose of one grain killed a rabbit in a few hours, with all the symptoms of narcotico-acrid poisoning.—J. D. M.

Officinal. Radices.

Officinal preparations. Tinctura Calumbæ, *Lond. Edin. Dub.* Infusum, *Lond. Edin.*

Dosis, *a* ʒi. *ad* ʒii. Tincturæ; *ab* ʒi. *ad* ʒiv. Infusi; et *a* ℈i. *ad* ʒss. Pulveris radicis.

BRYONIA DIOICA. *White or red Berried Bryony.*

Class and Order, MONOECIA POLYANDRIA. Nat. Ord. CUCURBITACEÆ.

GEN. CHAR. Male flower; *Calix* five-toothed; *Corolla* five cleft; *Filaments* three; *Anthers* five.

Female flower; *Calix* five toothed; *Corolla* five cleft; *Style* trifid; *Berry* inferior, globose, many-seeded.

Bryonia *dioica*; leaves palmate, rough on both sides; flowers diœcious.

B. dioica, *Fl. Brit.* p. 1019. *Eng. Bot.* t. 439. *Woodville, Med. Bot.* iii. p. 517. *Hooker, Br. Fl.* p. 404.

IN England, particularly in the southern parts, the Bryony is exceedingly common, being to be met with in almost every hedge-row; but in other parts of the kingdom it is comparatively scarce, and it can hardly be considered as a native of Scotland.

Root very large, from eight inches to a foot or more in diameter, of an irregular form, with fibres sparingly produced on all sides, penetrating deep into the soil, and tapering towards the extremity; stems numerous, long, weak, straggling, and frequently taking nearly a horizontal direction under ground, furnished with tendrils, and generally climbing; leaves large, palmate, and, as well as most other parts of the plant, sparingly furnished with thick glandulous hairs; flowers growing in clusters, the male and female flowers on different plants; berries at first green, but becoming a bright red when ripe. This plant is in common use as a laxative among the gardeners and labouring men in the south of England, who prepare the root by first cleansing it of all extraneous substances, then cutting it into small pieces, and steeping these in spirit (common gin;) after two or three days it is fit for use. The usual practice, is to fill a wine bottle as nearly as possible with the pieces of the fresh root, and add as much spirit as will cover it. The root if good will bear spirit to be added to it several times. It is more acrid when in full flower and before the berries begin to change colour;

* Journal de Pharmacie, xvii. 78.

but the root contains a greater quantity of juice during the winter season, though its taste at this time is less nauseous. The common dose is a small tea-cup full.

It is of very quick growth, and in a congenial soil will extend its stalks many yards round, provided it meets with anything around which its tendrils can entwine for support; but if suffered to trail on the ground, its growth is much stunted; its leaves are very subject to be devoured by catterpillars, and I have several times met wiih the *Sphinx ligustri*, the privet hawk-moth, hovering over the flower, many evenings in succession.—G.

The root of the Bryony has an extremely nauseous bitter taste, and acts as a violent purgative. It is not now used in medicine. When given in a moderate dose, it causes copious watery evacuations, accompanied with nausea, vomiting, and tormina; in a large dose, it acts as an acrid poison, causing death in a very short time. Orfila mentions a case where death took place in four hours, from the decoction of half an ounce of the root.* The same author found that half an ounce introduced into the stomach of a dog, or two drachms applied to a wound, caused death by inflammation.† Brandes and Firnhaber discovered a peculiar substance in the root of the Bryony, to which they have given the name of *Bryonine*. Their analysis is as follows.—

Bryonine mixed with a little sugar, 38; resin and wax, 42; resinous matter, 26; sweet extractive, 200; gum, 290; starch, 40; gelatine, 50; hardened fecula, 20; phosphate of magnesia and alumen, 10; malate of magnesia, 20; concrete albumen, 124; gummarine, 55; extractive, 340; vegetable fibre, 315; water, 440. The Bryonine, which is supposed to be the active principle, is of a reddish-brown colour, and of an extremely bitter taste. It is soluble in alcohol and water.‡ Richard remarks of this analysis, that the quantity of starch seems much under-estimated.—J. D. M.

References to Plate 22.

Fig. 1, A flower laid open; Fig. 2, Stamens; Fig. 3, Pistils; Fig. 4, Fruit; Fig. 5, Transverse section of the root.

RUMEX ACETOSA. *Common Sorrel.*

Class and Order, HEXANDRIA TRIGYNIA. Nat. Ord. POLYGONEÆ.

GEN. CHAR. *Calix* of three leaves, united at the base; *Corolla* of three petals; *Stigmas* multifid; *Nut* triquetrous, covered by the enlarged petals, which often bear tubercles.—*Hooker.*

SECTION II. Flowers Diœcious; Plants Acid.

Rumex *acetosa*; enlarged petals, orbicular, cordate, reticulated, scarcely tuberculated, leaves oblong sagittate.

R. acetosa, *Lin. Sp. Pl.* p. 476. *Fl. Brit.* p. 390. *Engl. Bot.* t. 127. *Woodville, Med. Bot.* ii. p. 193. *Hooker, Br. Fl.* p. 170.

* Orfila Toxicologie Generale, i. 680.

† Orfila Toxicologie Generale, i. 679.

‡ Histoire Naturelle Medicale, ii. 189.

Cytisus Scoparius

W.H. Lizars

Sorrel is a common plant, growing abundantly in fields and meadows throughout the kingdom. Its root is perennial, stalk upright, channelled, branched at the top, one or two feet high, radical leaves arrow-shaped on long footstalks, the cauline sessile, and alternate; flowers at the extremity of the branches of a green colour, with red or purplish veins. This plant, as well as the *acetosella* and *scutatis*, are often eaten as salad; the latter species is grown on the continent for that purpose; this section of the *Rumices* contain only plants that abound in an agreeable acid. The present species is the only one retained in the latest British Pharmacopœias, and should rather be considered as a culinary than a medical plant. *R. scutatis* is not considered as a native, but is occasionally met with in situations where it does not appear likely to have been introduced; the late Mr Curtis remarked he had found it in the summer of 1782, growing in such situations in the higher parts of Yorkshire and Westmoreland, as induced him to think it probably was a native; I found it last July within a few miles of Edinburgh, growing out of some ruins, in so elevated a situation as would exclude almost the possibility of its having been planted there; but how the seed should have been deposited in that spot, unless conveyed by birds, I am at loss to conjecture. Its leaves are more succulent than those of the *acetosa*, and likewise more acid. Twelve species are natives of Britain, exclusive of the *scutatis*.—G.

It is to the bin-oxalate of potass, which the leaves of the *Rumex acetosa* contain, that they owe their cooling properties; an infusion of the leaves forms a very agreeable drink in fevers and inflammatory diseases. A very curious, and at the same time important property, is attributed to the juice of this plant; it is that of destroying the acrimony of acrid vegetables, both before and after they have been swallowed. If the leaves of the Rumex be bruised along with those of one of the Ranunculaceæ, the latter lose their acrimony. * The leaves of the *Arum* are also said to become mild and innoxious when treated in the same way.† This subject deserves the utmost attention.—J. D. M.

Officinal. Folia.

CYTISUS scoparius. Common Broom.

Class and Order, Diadelphia Decandria. Nat. Ord. Leguminosæ.

Gen. Char. *Calix* two lipped, the upper lip nearly entire, or with two small teeth, lower one three-toothed; *Standard* large, broadly ovate; *Keel* very blunt, including the stamens; *Legume* flattened, many-seeded.

Cytisus *scoparius*; branches angular, glabrous, leaves in threes, the upper ones simple, leaflets oblong; flowers axillary, legumes hairy at the margin.

* Richard, Histoire Naturelle Medicale, i. 505. † Dictionnaire des Drogues, iv. 43.

PLATE 23.

C. scoparius, *Hooker, Br. Fl.* p. 319.

Spartium scoparium, *Lin. Sp. Pl.* p. 996. *Woodville, Med. Bot.* ii. p. 89. *Fl. Brit.* ii. p. 794. *Engl. Bot.* t. 1339. *Fl. Lond.* ed. 2. v. ii.

Genista scoparia, *Decand. Fl. Fr.* ed. 3, iv. p. 498.

The Broom is abundant on commons, heaths, and barren places; it forms a shrub from three to six feet high, very much branched, the branches upright, twiggy, green, angular, flexible, the young ones downy. It produces a profusion of flowers early in the spring, and merits a place in every extensive plantation or garden. It varies with double flowers, and sometimes its blossoms are of a deep orange colour.—G.

The leaves, young shoots, and seeds of the broom are diuretic, and in large doses emetic and purgative. A decoction of the young shoots is a favourite popular remedy in gravel and dysuria. In the seeds I found a substance analogous to the *Cytisine* obtained from the *Cytisus Laburnum* and *Arnica montana*, and procured by a somewhat similar process, which, as well as its effects on animals, will be described under the head of *Arnica montana*.—J. D. M.

Officinal. Cacumina.

References to Plate 23.

Fig. 1, Calix; 2, Vexillum; 3, Alæa; 4, Carina; 5, Stamens; 6, Pistil; 7, Seed-vessel in a young state; 8, Legume; 9, Seed.

ARCTIUM Lappa. Burdock.

Class and Order, Syngenesia Æqualis. Nat. Ord. Cichoraceæ, Tribe II. Cinarocephaleæ.

Gen. Char. *Involucre* globose, each of its scales with an incurved hook at the extremity; *Receptacle* chaffy; *Pappus* simple.

Arctium *Lappa*; leaves cordate, stalked.

A. Lappa, *Lin. Sp. Pl.* p. 1143. *Fl. Brit.* ii. p. 844. *Woodville, Med. Bot.* i. p. 41. *Engl. Bot.* t. 38. *Fl. Lond.* ed. 2, i. *Hooker, Br. Fl.* iv. 349.

A common plant, to be met with in waste places, road sides, and more seldom in fields. Its lower leaves attain to a large size; its stalks in the young state are often used for culinary purposes, and the roots are sometimes boiled and brought to table, for which purpose both root and stalks should be procured before the flowers expand, otherwise they become woody. There are two varieties of this plant, which have been considered as distinct spe-

Arctium Lappa.

W.H.Lizars sculp.

cies; the common one figured on the annexed plate and the *Bardana*; the heads of the latter are often thickly coated with a fine cottony substance resembling spider's web, but as they are to be met with in all stages between the perfectly free and densely coated heads, they can with propriety be only considered as varieties of the same species.

The heads or burrs, are, from their construction, admirably adapted for dispersion, by the hooked scales of the receptacle adhering to the skins and furs of animals, and the species is abundant over the whole of the kingdom.—G.

A decoction of the roots of the burdock is occasionally prescribed as a diaphoretic, and is highly spoken of by some authors, among others by Richard. The late Dr Duncan employed it occasionally as a substitute for Sarsaparilla with very good effect. In various parts of the Continent the roots are eaten by the peasantry, and are said to resemble artichokes. While analyzing the roots of the *Arctium*, I found a peculiar colouring matter which possesses the power of changing colour in a very remarkable manner. When the decoction is filtered, it is of a pale yellow: on the addition of ammonia the yellow deepens to orange, and if the liquid be immediately corked up, it will continue of that colour for years. When, however, it is exposed to the air for a few hours, it gradually assumes a greenish tinge, and at the expiration of eight or ten hours, every vestige of the yellow will have disappeared, and the liquid will have become of a green, more or less intense according to the strength of the decoction. After this change, if the green liquid be again put into a vessel closely stopped, yellow will again appear in a few days, and at the end of a fortnight or so, the orange will be completely restored. I have some portions of a decoction made four years since, which still exhibit this property of changing colour. To ensure its keeping for so long a time, it is necessary to add about a fifth part of alcohol.—J. D. M.

Officinal. Radices.

GALIPEA OFFICINALIS. *Angustura Bark.*

Class and Order, DIANDRIA MONOGYNIA. Nat. Ord. RUTACEÆ.

GEN. CHAR. *Calix* short, five-toothed; *Corolla* somewhat campanulate, deeply cut into five segments; *Stamens* four, two of which are sterile.

Galipea *officinalis;* leaves trifoliate; racemes nearly terminal; calix five-toothed; sterile stamens three.

G. officinalis, *Hancock in Trans. Medico-Bot. Soc.* i. p. 27.
G. cusparia, *Don Syst. of Gard.* i. p. 787.
Bonplandia trifoliata, *Willd. Act. Acad. Berl.* 1802, p. 24. *Humb. et Bonp. Pl. Equin.* ii. p. 59, t. 57.
Cusparia febrifuga. *Humb. Geogr. des Plantes.*

THE plant producing the true Angustura Bark, has been arranged in various genera by different authors. I had adopted the name of Bonplandia, as given by Humboldt, which

is the one engraved on the accompanying plate; but, finding Aublet's provincial name of Galipea recognized by most modern authors on the ground of priority, I have retained it.

This tree grows to sixty or eighty feet high, and is a native of South America, where it was first clearly ascertained by the celebrated Humboldt, and is accurately figured in his *Plantes Equinoxiales.* The true Angustura Bark is readily known from the spurious by the colour as well as texture. I have figured both on the annexed plate, which will supersede the necessity of further description.—G.

Angustura bark was introduced into European practice about forty years since; it is highly extolled by the Americans as a remedy in intermittent fevers, and in dysentery: it has also been recommended in yellow fever. When any inflammatory symptoms are present, its employment is contraindicated, as it is a highly stimulating tonic. The following chemical analysis is given by Berzelius from Fischer: 0.3 of acrid volatile oil; 1.7 of hard bitter resin; 1.9 of a soft balsamic resin; 0.2 of a substance analogous to caoutchouc; 3.7 of bitter extractive; 5.7 of gum, and 89.1 of woody fibre, besides various salts. The bitter extractive is soluble in water, to which it communicates a brownish or reddish-brown colour; its bitterness is increased by acids, and lessened by alkalies, which at the same time render the colour deeper. The watery solution is precipitated by the muriate of tin, by the acetate of lead, and by the nitrate of mercury. The salts of iron change the colour to a very intense brown, and cause a deposit of reddish flocculi. The infusion of nut galls causes a copious yellow precipitate. Brandes believes that he has discovered a vegetable alkaloid,* but other chemists have been unable to isolate it.—J. D. M.

Officinal. Cortex.

Officinal Preparations. Tinctura, *Edin. Dub.* Infusum, *Lond.*

Dosis, *a* ʒss. *ad* ʒi. Tincturæ; *ab* ℥ss. *ad* ℥iv. Infusi; et *a gr* x. *ad* ʒi. Pulveris.

BRUCEA ANTIDYSENTERICA. Antidysenteric Brucea, or False Angustura Bark

Class and Order, Dioecia Tetrandria. Nat. Ord. Rutaceæ.

Gen. Char. Flowers of separate sexes; *Calix* four parted; *Petals* four, hardly equal the length of the calix.

Male Flower; *Stamens* four, short, inserted round about a gland-like central four-lobed body.

Female Flower; *Stamens* four, sterile; *Ovaries* four, seated on a four-lobed receptacle, each terminated by a simple acute reflexed stigma; *Drupes* four, one-seeded.—*Don.*

* Berzelius, Traité de Chimie, vi. 218.

PLATE 26.

. 25.

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2

3

Bonplandia trifoliata

26.

1

2

3

Brucea antidysenterica.

G. Graves Del.

W.H. Lizars Sculp.

Brucea *antidysenterica*; leaves quite entire, clothed with rusty villi on the nerves beneath; racemes simple, spike-like.—*Don.*

This species is described by Don as a shrub of eight feet high. For the specimens from which the accompanying figures were taken, I am indebted to the kindness of Dr Christison; and I have contrasted them on the same plate with that of the true Angustura Bark, the more clearly to show the difference of structure in the two kinds; the epidermis in the *Bonplandia* is thin, and adheres closely to the liber; that of the Brucea is thick, and much resembles in appearance a crustaceous Lichen; its taste is intensely bitter, and it leaves a burning sensation in the throat, which continues for many hours. I chewed and swallowed a small piece, not exceeding in size half a hemp-seed, and for the greater part of that day I suffered exceedingly from dryness of the throat, which lasted for at least eight hours. In the smaller piece, Fig. 3, Plate 26, the inner side of the bark was pale-coloured, as in the figure, but in all other respects resembled the others, and possessed the same properties.—G.

The unpleasant effects which have been attributed to Angustura Bark, are now traced to the *Brucea antidysenterica*, which is occasionally met with under the name of Angustura, and has acquired the name of "False Angustura Bark." The accidents which occurred from the substitution of this for the true bark were at one time so numerous as to induce the Austrian and some other governments, to interdict the importation of the Angustura itself, and to order the destruction of all that already imported. Pelletier and Caventou ascertained by analysis, that the Brucea owes its poisonous qualities to the presence of an alkaloid, to which they have given the name of *Brucia*, or *Brucine;* it exists in the form of a gallate, and in considerable quantity, as though the alkaloid is only one-twelfth, or, according to some, one twenty-fourth part as strong as Strychnia, yet eight grains of the bark proved fatal to a dog, which shows it to be nearly as powerful a poison as the Nux vomica itself.* The symptoms produced are nearly the same as those caused by Nux vomica, viz. violent convulsions, succeeded by tetanus. *Brucia* occurs in *Strychnos nux vomica*, in combination with *Strychnia;* and it is to the admixture of the former that the latter owes what was supposed to be a distinguishing feature, that of becoming red on the addition of nitric acid. Berzelius, however, seems not to agree to this, for he says the red produced on the addition of nitric acid to *Brucia* may be distinguished by adding a little muriate of tin, which changes the red to a deep blue purple; this change does not take place either with *Strychnia* or *Morphia*. †

In cases of poisoning from the Brucea, ether and other stimuli ought to be freely administered. Dr Christison remarks, that during the intervals which occur between the spasmodic paroxysms the intellect is very acute. ‡—J. D. M.

* Orfila Toxicologie Generale, ii. 377.

† Berzelius, Traité de Chimie, i. 150.

‡ Christison on Poisons, 760.

CINCHONA. Peruvian or Jesuits' Bark.

Class and Order, PENTANDRIA MONOGYNIA. Nat. Ord. RUBIACEÆ.

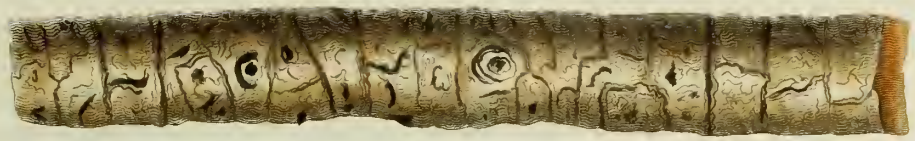
GEN. CHAR. *Corolla* monopetalous, funnel-shaped; *Capsule* inferior, two celled; *Seeds* numerous, oblong, compressed, winged.

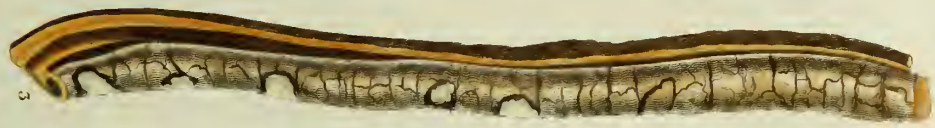
THE drugs known in commeree and medieine by the name of Peruvian bark or Cinehona, are obtained from South America, but other speeies are dispersed through the East and West Indies, the Philippine, and South Sea Islands. The Peruvian Bark is now held of the utmost importance in every part of the known world where the healing art is scientifieally practised, yet up to the present period we are in uncertainty as to the speeies producing the various kinds in eommon use.

Two centuries have passed away since this drug was first introdueed into European praetice, and though for a great length of time it shared the fate that all new medieines, however valuable, have eneountered from the hostility of interested or ignorant practitioners, its virtues were of that intrinsic kind that survive the prejudice of the times. When its real value was duly appreciated, the drug beeame a monopoly in the hands of the Jesuits, from whence it derived one of its older names, Jesuits' bark. At that period, in the priest were eommonly eombined the professions of medicine and theology; and we find that in most countries where the Roman Catholic is the established religion, the same practiee obtains in some degree to the present day.

The offieinal Cinehonas are natives of the mountainous forests of Peru, extending from the fourth degree of north latitude, and growing on mountains of from 3000 to 9000 feet in altitude. A. B. Lambert, Esq. has enumerated in his illustration of the genus, twenty-two speeies, and forty-four kinds of bark; but it is not a little remarkable, that with this considerable acquaintanee with the family, the identieal speeies whieh produce the principal barks of eommerce are by no means satisfaetorily ascertained. In an elaborate work on the Cinchonas by M. H. von Bergen of Hamburgh, he figures eight kinds of bark, which he considers the prineipal varieties to be met with in the drug market, but of these several are almost unknown in Britain; the Pale or Crown bark, the Yellow, and the Red, are all the kinds usually met with in our druggists warehouses, but in the Materia Medica Museum of the Edinburgh College, are specimens of numerous others, whieh appear from their taste to be of equal value with any of the best sorts.

The species directed for use by the British Colleges, are the *lancifolia*, *oblongifolia*, and *cordifolia*, but there is so much confusion as to the barks produeed by these speeies, that I have declined figuring the plants, but have given correct figures of those kinds of bark generally esteemed to belong to these species. The speeimens from whieh many of the drawings were made, I owe to the liberality of Dr Christison, who kindly aecommodated me





Fine Pale Bark fig 1. 2. 3. Brown Bark fig 4. 5. Inferior Pale Bark fig 6

G. Graves Del.

W.H. Lizars Sculp.

with the use of those in the Materia Medica Museum. I am also indebted to Messrs Duncan and Flockhart, Messrs Butler, and Mr R. Lindsay, Druggists, of Edinburgh, for fine specimens of the various kinds: these, with those in my own collection, including a considerable number that belonged to the late Dr Rutherford, professor of Botany in this University, for which I am indebted to Mr Macnab of the Botanic Garden, Edinburgh, have enabled me to present, what I hope will prove acceptable to all persons in any way concerned with these valuable drugs,—a series of figures of acknowledged accuracy, and by the comparing of which with any specimens whose identity it is desirable to ascertain, a near approach to certainty will be made.

The Cinchonas form trees from thirty to one hundred feet high, but from the destruction constantly going forward in the Cinchona forests, they are rarely found of any considerable magnitude at the present day; few specimens of the bark reach this country that appear to belong to any but either very small trees or branches. It is highly probable that other species exist of equal value to those I have enumerated, but the quantity of active principles contained in the barks, *quinine* and *cinchonine*, differ greatly in the different kinds. Some specimens I examined under the name of Potoya Bark, were equal in flavour to the best Crown bark; that known as the Carthagena bark, is often met with, but is in little estimation. The Silver bark is likewise of but little value, though in some countries it is thought to possess considerable virtues.

It has fallen to the lot of few articles contained in the Materia Medica, to have had so many writers on their properties: M. H. Von Bergen, in his treatise before alluded to, has occupied no fewer than seventy-two quarto pages in enumerating the various books either written entirely on the Cinchona, or having a reference to it; this list comprises six hundred and thirty-six authors, and eight hundred and eight books, pamphlets and articles, all on this interminable subject,—yet strange it must appear, that we are still in ignorance of the exact sources whence our officinal drugs are obtained.—G.

CINCHONA CONDAMINEA. *Pale or Crown Bark.*

Cinchona *Condaminea*; leaves ovate lanceolate, smooth, shining, beneath having little hollows at the axils of the veins; panicle much branched; teeth of the calix ovate acuminate; corolla silky, segments ovate acuminate; capsule oblong.

Cinchona Condaminea. *Humboldt et Bonpland, Plantæ Æquinoc.* i. p. 33. t. 10. *Lambert, Ill. of the genus Cinchona*, p. 2. *H. von Bergen, Monographie der China*, p. 148, tab. 1, 2.

C. officinalis. *Lin. Sp. Pl.* ii. p. 244.

THIS species is supposed to produce the pale or crown bark of the shops, but as several figures

of the plant are published which are copied from each other, I consider it unnecessary to add another. On the annexed Plate, 27, are represented at figs. 1, 2, 3, specimens of the finest pale quilled bark; which has a pale-greyish or ash-coloured epidermis, frequently blotched with various species of lichen and parasitic fungi. In substance it is about the eighth of an inch thick, mostly quilled; the inner surface of a pale cinnamon colour, of a resinous appearance, breaking short, and is friable between the teeth; its taste is bitter, but with somewhat of an aromatic flavour, and it is one of the pleasantest of the *Cinchonæ*. Mixed with this is often found a thinner sort of a duller colour, with the epidermis of an uniform dull-brown, and having the inner side much duller than the previous kind; it differs also in having the circular fissures in the epidermis nearly obsolete, whilst in the finer kinds, these rings are deep and broad, and often appear as if occasioned by ligatures having been tightly fastened: it is represented at fig. 6, Plate 27, and is much inferior to either the pale or crown bark; is much thinner, more fibrous, and has less taste, and this, frequently with a slight admixture of mustiness. It commonly has the same parasitical fungi and lichens. Crown bark, which is esteemed as a variety obtained from the same species as the two foregoing, is held in great repute, and acquired its appellation from its being reserved for the exclusive use of the royal household of Spain. It is of a much darker colour on the exterior, but internally resembles the pale bark in its fracture and taste, but the latter is more intensely bitter. The lichens found on this kind, differ from those on the foregoing; besides various small patches of uncertain figure which are distributed on the surface, a light bluish-grey pulverulent kind is scattered in blotches, that give it an ash-coloured appearance. It is represented at figures 4 and 5, Plate 27.—G.

The Pale, Grey, or Crown bark, is the mildest and least nauseous of the genus, and is more frequently prescribed as a tonic than as a febrifuge. It derives the name of Pale from the colour of its powder, which is of a much lighter shade than that of either the yellow or red bark. The name of Grey Bark is derived from the colour of its epidermis.

Species of Cinchona which are enumerated under the head of Pale or Grey Bark:

1. *Cinchona Condaminea.* 2. *C. glandulifera.* 3. *C. pubescens.* 4. *C. purpurea.*—J. D. M.

CINCHONA CORDIFOLIA. *Yellow Bark.*

Cinchona *cordifolia;* leaves heart-shaped at the base, roundish ovate, acute; panicle branched, pubescent; calix five-toothed, the segments broad, rounded, terminated by a mucro; capsule smooth, ovate-oblong.

C. cordifolia. *Lambert, Ill.* p. 4. *Von Bergen,* p. 161.

PLATE 28.

1

5

2

3

4

Yellow Bark (Quilled) fig 1.2.3.4
Do do flat do 5.

Red Bark (Quilled) fig 1.2.3.4.5. Do flat fig 6.

G. Graves Del.

The yellow bark is of recent introduction into European practice, and was brought to this country about the year 1790; it is of a deeper colour than the pale bark, and bears a great resemblance to that kind. It is usually imported in larger pieces than the Pale or Crown bark; it is of a more powerfully bitter taste; and is commonly met with in flat pieces, as represented at figure 5, Plate 28. Its appearance is fibrous, but it breaks short with a shining fracture. The flat yellow bark is generally without its epidermis, and is often mixed with splints of the wood; the quilled kind usually loses its epidermis, and is in every direction traversed by deep fissures. Its surface, on removing the epidermis (in the larger pieces) is dark-brown, but beneath is of the same bright orange-yellow as the inner side. The smaller pieces of quilled bark seem to have their epidermis destroyed by the numerous lichens with which it abounds; these are generally of a grey, almost white colour. The smaller quills are commonly paler coloured than the flat or larger quilled kind, and are figured in several varieties, at 1, 2, 3, 4, Plate 28. It may be proper to notice, that those pieces which on examination have their pores filled by a shining resinous matter, are accounted of less value than those in which the texture of the bark is visible without the resin.—G.

The yellow bark, which is the one most commonly prescribed in this country, is powerfully febrifuge and tonic. When powdered, it ought to be of a bright-yellow, with a slight tinge of orange.

Species of Cinchona which are enumerated under the head of yellow bark:

1. *Cinchona cordifolia.* 2. *C. lancifolia.*—J. D. M.

CINCHONA OBLONGIFOLIA. *Red Bark.*

Cinchona *oblongifolia;* leaves oblong, broad, ovate, smooth, and shining, beneath tomentose; panicles corymbose, branched, woolly; corolla with spreading lanceolate segments, hairy within; capsule ovate.

C. oblongifolia. *Lambert, Ill.* p. 12. *Von Bergen*, p. 197.

Red Bark was introduced into Britain about the year 1780, and was then held in great esteem, but has latterly much declined in estimation; its substance is coarse and heavy, of a deep but dull red colour on the outside; within brighter. It is fibrous, but breaks short, and is friable between the teeth; it is usually imported in flat pieces without the epidermis, as at figure 6, Plate 29, but is occasionally met with quilled; the epidermis of the smaller pieces is of a dull greyish-brown, and it is generally invested with numerous lichens, mostly of a white or cream-colour; these, as at fig. 4, seem to absorb or destroy the epidermis. I have some specimens which are so close and heavy as to sink in water. From the discordant opinions of botanists, it is pretty certain that the tree producing the red bark is not ascertained.—G.

PLATE 29.

The most powerful, and at the same time the most disagreeable of the cinchonæ, is the red bark; it never was so highly esteemed as either of the foregoing, but from the quantity of the active principles which it contains, it may be regarded as among the most valuable species in commerce.

Species of Cinchona which are enumerated under the head of Red Bark:

1. *Cinchona oblongifolia.* 2. *C. magnifolia.*—J. D. M.

The natural family of the Rubiaceæ (Cinchonaceæ of Lindley), produces many medicinal plants of very great value, among which *Cinchona* and *Cephaelis* are pre-eminent. The genus Cinchona includes a great variety of species, differing a good deal from each other in strength, but all possessing, as far as we are acquainted with them, febrifuge or tonic virtues. The mode in which the febrifuge properties of this genus became first known is uncertain: the discovery is usually attributed to the Jesuits; but whether they derive their information from the Peruvians, or whether they made the discovery themselves, is not ascertained. The name *Cinchona* is said to have been given to this drug, from the circumstance of a Countess of Cinchona, the wife of the Viceroy of Lima, having been cured of fever by the use of it. Although many eminent physicians opposed the use of cinchona on its first introduction, and for some time afterwards, we find that its virtues have been pretty generally acknowledged and appreciated, since the middle of the 17th century.

As a febrifuge, it is prescribed in intermittent and remittent fevers, and also in continued fever; in the latter, however, it ought only to be employed in the debility which follows the disease, or when typhoid symptoms present themselves; in the first stage, or that of excitement, the use of so stimulating a substance would be injurious; in intermittent fevers, considerable difference of opinion exists with regard to the period at which the dose ought to be given, some advocating the administration immediately before the accession, others immediately after it, and others during the whole intervals between the fits. Richard recommends it to be given seven or eight hours before the accession, in which case, he says, the medicine has time to operate before the hour at which the accession takes place. He reprobates the idea of giving it immediately before or during the accession, as in this case the violence of the fit is increased. In remittent fever, the same author advises that the bark should be administered towards the end of one exacerbation, so as to moderate or prevent the next.

In all diseases in which there is a tendency to gangrene or putrescency, cinchona is one of the most valuable remedies we possess. In hospital gangrene, in confluent small-pox, putrid sore throat, and erysipelatous inflammation, large and repeated doses, combined with diffusible stimuli and the mineral acids, are frequently successful. As a tonic, cinchona is useful in all cases in which there is constitutional debility, uncombined with organic disease, in dyspepsia arising from loss of tone, in diarrhœas which have lasted for a length of time, in contagious dysentery, in scurvy, in passive hemorrhage, and in some varieties of hæmoptysis. Dr Haygarth has mentioned the efficacy of cinchona in curing rheumatism even without the assistance of venesection or any of the usual means employed for the cure of that disease. In dropsy, as a general tonic, it sometimes succeeds in preventing a return after the water has been evacuated either by medicine or by tapping. In malignant ulcers in which the edges are flabby, and where there is an obvious want of proper action, cin-

chona may be advantageously prescribed both as an internal remedy, and as an external application.

Though the discovery of the active principles of Cinchona, has rendered the exhibition of the bark or its preparations of rarer occurrence than formerly, yet as some practitioners prefer it, and as in some instances it may be more efficacious or convenient, it may be as well to mention shortly what are considered the best modes of giving it. The powder, which is by many considered the best preparation, is to many persons extremely nauseous and cannot be persevered in from the sickness to which it gives rise,—the addition of half a grain of opium (when it is admissible), or of half a drachm of some aromatic powder, such as cinnamon, will in most cases prevent this disagreable effect, but if not, recourse must be had to the infusion or tincture, which are less apt to occasion unpleasant effects.

Perhaps no discovery in vegetable chemistry has been of more importance to the practising physician than that of the vegetable alkaloids, and particularly of these contained in the *Cinchonæ*. As the existence of these was first indicated in Cinchona, and as many chemists have laid claim to the discovery, which is due to the late Dr Duncan Junior, I think it proper to publish the account which he gives of his experiments, because, though he stopped short, and did not make out the alkaline properties of the substance he found, yet having pointed it out as distinct from any previously known to chemists, he had the merit of drawing the attention of those who had made vegetable analysis their study to the subject, and of leading the way to the discovery of vegetable alkaloids and proximate principles.

" Letter from Andrew Duncan, M. D. F. R. S. E. containing Experiments and Observations on Cinchona, tending particularly to shew that it does not contain Gelatine, [to Mr Nicholson.]

" Having been long engaged in a series of experiments on the astringent substances employed in medicine, I was particularly interested with the ' Abstract of a Memoir on the Febrifuge Principle of Cinchona,' contained in the last number of your excellent Journal. The presence of gelatine in cinchona was so incompatible with experiments I had formerly made, that I was strongly inclined to believe, that Seguin (than whom no one should be better acquainted with the combination of tannin and gelatine) had been misled, either from having examined cinchona which had been adulterated, or from some other accidental cause. To satisfy myself, I immediately proceeded to the unerring test of experiment, which has convinced me that cinchona does not contain gelatine, but some other principle not yet sufficiently examined, which agrees with gelatine, in forming with tannin a precipitate comparatively insoluble in water. At the same time, it is but fair to remark, that my experiments were made with the infusion and tincture of cinchona, containing all the soluble principles of that substance, whereas Seguin's observations are said to be derived from the examination of the isolated febrifuge principle, of which he gives the following characters: ' It precipitates the solution of tan, but not the solutions of gelatine and sulphate of iron.' On the contrary, my experiments teach me, that the entire infusion and tincture of cinchona precipitate the solution of tan, and also the solution of gelatine slightly, and the solution of sulphate of iron copiously. But as the two last precipitates may be reasonably ascribed to the action of other principles contained in my infusion and tinctures of

cinchona, I shall not insist upon them, but proceed to shew that, although cinchona actually does precipitate the solution of tan, yet it does not contain gelatine.

"*Exp. I.—(a.)* An ounce of infusion of galls was saturated, by adding to it, in different portions, an ounce and a-half of infusion of cinchona. The mixture was white and turbid, with a loose light precipitate.

"*(b.)* On filtration the fluid passed almost colourless, and perfectly transparent.

"*(c.)* The precipitate, when dried, weighed five grains. It had a yellow colour, and an opaque earthy appearance; was extremely friable, and did not adhere to the filtering paper.

"*(d.)* The filtered fluid gave no further precipitate with solution of cinchona; but with half an ounce of solution of gelatine, containing six grains of gelatine in each ounce, it produced a copious precipitate, and was saturated.

"*(e.)* The precipitate, when separated by filtration, and dried also, weighed five grains, but was hard and brittle, adhered strongly to the paper, had a yellow colour, and exactly resembled a resin in appearance.

"*Exp. II.—(a.)* An ounce of the same infusion of galls was saturated by an ounce and a-half of the same solution of gelatine. Immediately a very copious, whitish, tenacious, and adhesive precipitate was formed.

"*(b.)* On filtration the fluid passed very slowly, and even after repeated filtration, still retained a slight degree of opaline bluishness.

"*(c.)* The precipitate when dried, weighed fourteen grains and a-half. It had a brownish-yellow colour, was transparent, and had a resinous appearance and fracture. It was also hard and brittle, and adhered strongly to the filter. In every particular it resembled the precipitate produced in the former experiment *(Exp. I. e.)* by gelatine, after the infusion of galls was completely saturated by cinchona.

"*(d.)* In the filtered liquor, *(Exp. II. b.)* infusion of cinchona produced no change.

"*Exp. III.*—To an ounce and a-half of the same infusion of cinchona, half an ounce of the solution of gelatine was added. It produced only a slight degree of turbidness, and changed the colour of the infusion from a pale-greenish to a reddish-yellow colour. When filtered, it passed perfectly transparent, and the bottom of the filter was covered with a red varnish; but it had gained only one grain in weight. In other experiments with larger quantities, and stronger infusion of cinchona, the presence of tannin was more strongly indicated.

"*Exp. IV.*—Infusion of galls was not affected by rectified spirits of wine, in which isinglass had been long infused.

"*Exp. V.—(a.)* A tincture of cinchona was prepared by infusing it in the same rectified spirits. After it was filtered, some resin was separated by precipitation with water and filtration.

"*(b.)* With infusion of galls this tincture gave a copious precipitate, exactly resembling that produced by the same re-agent and infusion of cinchona. *(Exp. I. c.)*

"*Exp. VI.*—With tincture of galls the same tincture of cinchona gave no precipitate.

"*Exp. VII.*—In the mixed tincture *(Exp. VI.)* a copious precipitate was produced by diluting it with water.

" *Exp. VIII.*—A solution of carbonate of potash (salt of tartar) produced a copious white flaky precipitate in the solution of gelatine, which was soluble in boiling water, but was not precipitated from the solution by infusion of galls, until some acid was added.

" *Exp. IX.*—The solution of carbonate of potash changed the colour of the infusion of cinchona to a fine red, without disturbing its transparency.

" These facts seem to me sufficient to prove the difference between gelatine and the new principle in cinchona, which, for the sake of convenience, I shall venture for the present to denominate Cinchonin.

" Gelatine is soluble in water, and the solution is disposed to gelatinize. Six grains of isinglass dissolved in one ounce of water, form with it, at temperatures below 60° Fahrenheit, a jelly of considerable firmness. From its solution in water, gelatine is precipitated by alcohol, and a solution of carbonate of potash. It is precipitated also by tannin, and the precipitate forms a hard brown transparent mass.

" Cinchonin is soluble in water, but gives it no tendency to gelatinize. From its solution in water, it is not precipitated by a solution of carbonate of potash. It is soluble in alcohol. It combines with tannin. The compound is soluble in alcohol, but forms, when water is added, or used as a menstruum, a friable opaque yellowish precipitate; but cinchonin does not separate even from a watery solution of tannin, all that is precipitable by a solution of gelatine."

Dr Gomez of Lisbon, discovered that Dr Duncan's *Cinchonin* was crystallizable, but did not observe its alkaline properties. Pelletier and Caventou, while examining the nature of the crystalline matter described by Gomez, discovered its alkaline nature, and pushing their inquiries further, they discovered in the *Cinchona cordifolia* another principle, possessing alkaline properties, but uncrystallizable, to which they gave the name of *Quininc.*

The chemical constitution of the three officinal barks is as follows :

1. *Cinchona Condaminea.* Pale bark.

Cinchonine in the form of a kinate; green fatty matter; red colouring matter of little solubility; red colouring matter, soluble, and closely resembling tannin in its properties; yellow colouring matter; kinate of lime; starch; gum. A very small quantity of *Quinine* has been found to exist in this bark.

2. *Cinchona cordifolia.* Yellow bark.

Quinine united with an excess of kinic acid; cinchonic red; red colouring matter soluble and analagous to tannin; kinate of lime; starch; woody fibre, and a small portion of *Cinchonine.*

3. *Cinchona oblongifolia.* Red bark.

Cinchonine in the form of an acid kinate; *Quinine* also combined with an excess of kinic acid; red colouring matter analogous to tannin; kinate of lime; cinchonic red; fatty matter; yellow colouring matter; starch; woody fibre.

It is only of late that the existence of *Quinine* in the pale, and of *Cinchonine* in the yellow bark was ascertained. It was formerly supposed that the pale contained only *Cinchonine*, and the yellow only *Quinine*, while the red contained both; but it is now proved that the two alkalies exist in each of the barks, though in different proportions.

Cinchona Condaminea contains two grammes of *Cinchonine* and a trace of *Quinine* in the kilogramme. *

Cinchona cordifolia,—nine grammes of *Quinine* with a trace of *Cinchonine* in the kilogramme.

Cinchona oblongifolia,—seventeen grammes of *Quinine* and eight of *Cinchonine* in the kilogramme. †

The proportion of the active principles agrees perfectly with the comparative strength of each kind of bark, though not with its value; thus, the pale and yellow barks, which are the weakest, are the most valued, and the red which contains four times as much *Cinchonine* as the pale, and twice as much *Quinine* as the yellow, is the least valued of the whole.

Cinchonic red was discovered by M. Reuss of Moscow, while examining the resinous substance described by Fourcroy and Vauquelin; he found it to be a compound substance, which, indeed, the discoverers had surmised. The portion which he calls Cinchonic red is tasteless and inodorous; of a brown-red colour; easily soluble in alcohol; sparingly so in boiling water; soluble in alkalies, by which its colour is deepened; precipitated from its alkaline solutions by acids; causing a precipitate in solutions of tartar emetic.

The fatty matter mentioned in the above analyses, probably owes the green colour which it possesses when obtained from the pale bark, to the presence of chlorophyle, as that procured from the other kinds is not green.

A great variety of processes for preparing *Quinine* and *Cinchonine* have been described. They may be divided into three heads, viz. by alcohol; by an acid; by an alkali.

By alcohol,—Pelletier and Caventou recommend that an alcoholic extract should first be prepared, that this should be acted on by dilute muriatic acid, that the acid solution should then be saturated by magnesia, and that an excess of that earth should be added to precipitate the alkali; the precipitate after being dried is to be boiled in alcohol, and filtered while hot; as the liquid cools the alkali is deposited, and is to be purified by subsequent boiling in alcohol and crystallization.

This process is very expensive, and not so productive as the following, which was first practised by M. Henri, and is an example of the process by an acid.

The bark, in coarse powder, is to be boiled with eight times its weight of water, to which sulphuric acid has been added in the proportion of a twentieth part of the weight of the bark employed. This part of the process is to be repeated with the same quantity of acidulated water; the decoctions are then to be united, filtered, and mixed with quicklime, equal to one-fourth of the weight of the bark. The precipitate which is formed, is to be dried and boiled with three different portions of alcohol, sp. gr. 836. The alcoholic solutions are to be filtered while hot, and then distilled; the residue in the retort consists of the mixed alkalies in an impure state; they are to be purified by repeated solution and crystallization.

The process by an alkali is this: The bark is to be boiled in water, to which caustic potass has been added in quantity sufficient to render the liquid alkaline after the boiling is

* Two grammes are equal to 30.88 Troy grains; nine, to two drachms, 18.96 grains; seventeen, to four drachms, 22.48 grains; eight, to two drachms, 3.52 grains. The kilogramme is equal to two pounds, eight ounces, one drachm, and twenty-four grains, Troy.—J. D. M.

† Duncan's Dispensatory, 302, and Journal de Pharmacie, T. vii. 1821, p. 49.

finished, by this means the resin, acids, and extractive matter are dissolved, and the alkalies (*Quinine* and *Cinchonine*) are left mixed with woody fibre; the decoction is to be filtered, and the residue washed with a little water and squeezed; it is then to be macerated in water acidulated with muriatic acid, the acid solution is to be filtered, and supersaturated with magnesia. The precipitate which is formed, is to be treated as in the other processes above-mentioned.

These three processes are examples of the three divisions. Their modifications are very numerous, and will be found given at great length in various numbers of the Annales de Chimie, Journal de Pharmacie,—de Chimie Medicale, in Berzelius, vol. v. and vi., Richard, Histoire Naturelle Medicale, Dictionnaire des Drogues, &c. *Quinine* and *cinchonine* may be separated from each other in three different ways. 1st, By dissolving the mixed bases in alcohol and evaporating the solution to a certain point, the *cinchonine* is deposited on cooling, while the *quinine*, which is much more soluble, remains in solution, though still mixed with a small portion of *cinchonine*. 2d, By digesting in ether, which dissolves the *quinine*, and leaves the *cinchonine*. 3d, By saturating the mixed bases with sulphuric acid, which ought to be added in a slight excess. An acid sulphate of each is formed, and as the sulphate of *quinine* is little soluble, all that is required is to evaporate the solution, so that it shall crystallize on cooling. The sulphate of *cinchonine* remains in solution, mixed with a little sulphate of *quinine*, to separate it from which the bases are to be precipitated by an alkali, and separated from each other, by process No. 1 or 2.

Quinine is easily prepared by precipitation from its sulphate by means of an alkali; it is thrown down in a flocculent form, and is in the state of a hydrate. It is extremely difficult of crystallization, and was long considered uncrystallizable, but Pelletier has succeeded, by dissolving it in alcohol, sp. gr. 815, and allowing it to evaporate spontaneously. The crystals are small, and differ in form from those of *cinchonine*. *Quinine* is nearly insoluble in cold water, but boiling water dissolves a 200th part of its weight. Its solutions are excessively bitter.

According to Pelletier and Dumas, *quinine* is composed of

Carbon,	75.00
Hydrogen,	6.66
Nitrogen,	8.45
Oxygen,	10.40

Or in atomic numbers,

Carbon,	30
Hydrogen,	32
Nitrogen,	3
Oxygen,	3

Cinchonine is obtained from its sulphate in the same way as *quinine*; it is less soluble in alcohol, and crystallizes with great facility in four-sided prisms, terminated by two oblique facettes. Its taste is intensely bitter, resembling that of *quinine*. When heated, it sublimes, before decomposition, in brilliant needles; it is nearly insoluble in cold water, and boiling water dissolves only a 2500th part of its weight.

According to Pelletier and Dumas, *cinchonine* is composed of

Carbon,	-	76.97
Hydrogen,	-	6.22
Nitrogen,	-	9.02
Oxygen,	-	7.79

Or in atomic numbers,

Carbon,	-	39
Hydrogen,	-	39
Nitrogen,	-	4
Oxygen,	-	3

Under the head of opium, the best processes for preparing the sulphates of *cinchonine* and *quinine* will be considered, while treating of the muriate of morphia.

Quinine and *cinchonine* possess all the tonic and febrifuge virtues of the Cinchonæ in a concentrated form, but their insolubility renders them ineligible as remedies. They are always prescribed, united with an acid, and of the salts formed the sulphates are the most generally used. Of these the sulphate of *quinine* is by far the most commonly prescribed.* In general debility, in the dyspepsia of weak habits, and in intermittent and remittent fevers, it is a sovereign remedy. In all diseases which return periodically, in rheumatism, in tic douloureux, it has succeeded after the failure of the more ordinary modes of treatment.

As a tonic, the sulphate of *quinine* is given in doses of from one to two grains, twice or thrice a day, either in the form of pill or in solution.

As a febrifuge, the dose varies with the character of the fever. It is usual to begin with two or three grains twice a-day, and gradually to increase the dose to seven or eight, or even more. The increase must be regulated by the effects. In rheumatism the quantity given is much larger. Dr Duncan, who was among the first to use it, gave ten or twelve grains twice or thrice a-day, and in one case, I recollect of its having been administered in scruple doses with the most complete success.

In tic douloureux, the dose ought also to be large. If the constitution suffer much disturbance, the dose must of course be lessened, and the remedy intermitted if necessary.—J. D. M.

Officinal. Cortex.

Officinal preparations. Tinctura Cinchonæ, *Lond. Edin. Dub.* Tinctura Cinchonæ Composita, *Lond. Edin. Dub.* Tinctura Cinchonæ Ammoniata, *Lond.* Infusum Cinchonæ, *Lond. Edin. Dub.* Decoctum, *Lond. Edin. Dub.* Extractum, *Lond. Dub.* Extractum per Alcohol et Aquam, *Edin.* Extractum Cinchonæ Rubræ Resinosum, *Dub.*

Dosis, *a* ℈i. *ad* ʒiss Pulveris; *ab* ʒi. *ad* ʒiv. Decocti; *a* gr. x. *ad* ʒss. Extracti; *a* gr. v. *ad* ℈ss. Extracti resinosi; *ab* ʒi. *ad* ʒiv. Infusi; *a* ʒi. *ad* ʒii. Tincturæ et Tincturæ compositæ; *a* ʒss. *ad* ʒi. Tincturæ ammoniatæ.

* Those who wish to become acquainted with the other salts of *quinine* and *cinchonine*, with their properties, and with the modes of preparing them, are referred to *Berzelius*, Traité de Chimie, vol. v. p. 152 to 168.—J. D. M.

CARDAMINE PRATENSIS. *Common Cuckoo-flower, or Lady's Smock.*

Class and Order, TETRADYNAMIA SILIQUOSA. Nat. Ord. CRUCIFERÆ.

GEN. CHAR. *Pod* linear, the valves flat, generally separating elastically, nerveless, seed-stalks slender; *Cotyledons* accumbent.

Cardamine *pratensis;* leaves pinnate, radical leaflets roundish, toothed, cauline ones lanceolate, nearly entire, style straight, stigma capitate.

C. pratensis, *Lin. Sp. Pl.* 915. *Fl. Brit.* 699. *Engl. Bot.* t. 776. *Woodville, Med. Bot.* i. p. 89. *Fl. Lond.* ed. 2. iii. *Hooker, Br. Fl.* p. 302.

THIS is a most abundant species, being found in profusion in almost every moist pasture or wet meadow throughout the kingdom, producing its lively purple (sometimes white) flowers, towards the end of April or beginning of May; it has acquired the common name of Cuckoo-flower, from the circumstance of its blossoms expanding about the time the Cuckoo visits this country; it is frequently found with double flowers both wild and cultivated, and this variety increases rapidly by its leaves, all of which growing in contact with the ground, throw out fibres from both the upper and under sides, and when once rooted the footstalk of the leaf decays.—G.

At one time the *Cardamine pratensis* was in some repute as a diuretic; it is now never used in medicine, but is occasionally eaten instead of the water-cress, which it resembles in taste. Dr Duncan attributes diaphoretic properties to it.—J. D. M.

OXALIS ACETOSELLA. *Common Wood Sorrel.*

Class and Order, DECANDRIA PENTAGYNIA. Nat. Ord. OXALIDEÆ.

GEN. CHAR. *Calix* five-parted; *Petals* five, free or sometimes united together at the base; *Stamens* ten, filaments frequently connected at the base, the five outer ones shorter than the others; *Capsule* angular, five-celled; *Cells* two or many-seeded; *Seeds* with an elastic arillus.

Oxalis *acetosella;* leaves radical, in threes, leaflets inversely heart-shaped, hairy, scape single-flowered, root scaly.

O. acetosella, *Lin. Sp. Pl.* 620. *Fl. Brit.* 491. *Engl. Bot.* t. 762. *Woodville, Med. Bot.* i. p. 56. *Fl. Lond.* ed. 2. i. *Hooker, Br. Fl.* p. 211. *Don's Syst. of Gard.* i. p. 765.

Root perennial, horizontal, scaly, with a few straggling fibres; leaves on long, slender, reddish footstalks. The leaflets fold together and droop at night, and during wet weather. Flowers large, usually white, elegantly striped with purple veins; seed-vessel bursting on being slightly handled; and towards the end of summer, it frequently produces perfect capsules and seeds, without any appearance of corolla; as is common with several species of *Violet.*

It is subject to considerable variety in the colour of its flowers. In some the blossoms are a pale bluish tint, and it is then the var. β. of Decandolle; in others they are pale rose coloured, when it is var. γ. of the same author. The genus is very extensive; two hundred and twenty-three species are described in Don's System of Gardening, only two of which are natives of this country.

Wood-sorrel is found in shady woods and coppices, also among stones and rocks at a great elevation, on some of the highest mountains in Scotland. It is a plant of easy cultivation, and from its beauty is well worth the attention of the horticulturist.—G.

The wood-sorrel contains a considerable portion of the bin-oxalate of potass, which communicates to its juice the pleasant acid for which it is so well known. An infusion made from the leaves forms a pleasant cooling drink. At one period, the bin-oxalate of potass, which is well known by the name of "Essential salt of Lemons," was prepared entirely from this plant, and from the *Rumex acetosa.*

While prepared in this manner, the salt was expensive, as only about a drachm was obtained from a pound of the fresh plant. In 1827, Scheele published a process for preparing this salt, by the addition of potass to oxalic acid, and in this way, all the bin-oxalate used in medicine, or for domestic purposes, is prepared. A weak solution, sweetened with sugar, is sometimes given as a cooling drink in fevers and inflammatory diseases.

Oxalic acid is more frequently used for the purpose of removing stains, than this salt, as it acts much more readily, and with greater certainty.

A short time since a paper appeared in the Journal of the Royal Institution,* in which the author proves, or attempts to prove, that the *Oxalis acetosella* is the true shamrock J. D. M.

Officinal. Folia.

JUNIPERUS COMMUNIS. *Common Juniper.*

Class and Order, Diœcia Monadelphia. Nat. Ord. Coniferæ.

Gen. Char. Male Flowers; *Scales* of the *Catkin* subpeltate; *Perianth* wanting; *Stamens* four to eight, one-celled.

* Volume i, 453. Paper by Mr Bicheno.

Female Flowers; *Scales* of the *Cathin* few, united, at length fleshy, and surrounding the three-seeded *berry*.

Juniperus *communis;* leaves three in a whorl, mucronate, spreading or imbricated, longer than the berry.

J. communis, *Lin. Sp. Pl.* 1470. *Fl. Brit.* iii. p. 1085. *Engl. Bot.* t. 1100. *Woodville, Med. Bot.* pl. 95. *Hooker, Br. Fl.* p. 438.

A HARDY perennial shrub, varying in size according to the situation and altitude in which it grows, at times reaching several feet in height, and at others being almost prostrate. Its branches are much divided, and thickly beset with numerous long, pointed, dark-green leaves. It flowers in May, and its berries continue on the bush for two years before they are ripe, when they are of a bluish-black colour. They are much used to flavour spirits, and communicate the peculiar flavour so much admired in Hollands.

This species is dispersed over all the northern parts of Europe and America, and is abundantly met with on dry elevated places throughout Great Britain. In the procumbent state of the plant it has been described by some authors as a distinct species, under the name of *J. nana*, but as above stated it may be found in all varieties of form, from a low trailing shrub to a bush several feet high. In Loudon's Hortus Britannicus twenty-four species are enumerated, of which only the present species and its varieties are indigenous.—G.

The berries of the Juniper have a sweetish, somewhat aromatic, taste; they are stimulant carminative, tonic, and diuretic. According to Berzelius they contain 1.0 of volatile oil (sp. gr. 0.853;) 4.0 of wax, brittle, and very easily dissolved by ether and boiling alcohol, and by caustic potass; 10.0 of green tasteless resin, easily reducible to powder; 38.8 of a kind of sugar which crystallizes in grains, though with difficulty; it is of the yellow colour of honey, and attracts moisture from the air; it cannot be obtained colourless; it is not so sweet as grape sugar, and does not answer well for sweetening other substances. Besides these substances, the berries contain 7.0 of gum, mixed with the salts of the vegetable acids; and 35.0 of vegetable fibre.

The essential oil has the peculiar flavour of the berries, and possesses their diuretic and stimulating properties. To its presence Hollands owes its peculiar flavour; English gin ought also to be prepared from it, but in the preparation of this spirit, oil of turpentine is used in large quantities, often without the smallest admixture of oil of juniper. The Dutch, in making Hollands, do not first distil the oil and then add it to the spirit; they submit the berries to the process of fermentation along with the malt, and then proceed with the distillation. Both the decoction and extract are mere weak bitters, the greater part of the oil being dissipated in their preparation.—J. D. M.

Officinal. Baccæ.

Officinal Preparations. Oleum Volatile, *Lond. Edin. Dub.* Spiritus Juniperi Compositus, *Lond. Edin. Dub.*

Dosis, *a* gtt. iii. *ad* x. Olei volatilis; *ab* ℥ss. *ad* ℥i. Spiritus compositi; et *a* ʒss. *ad* ʒi. Pulveris Baccarum.

JUNIPERUS SABINA. Savine.

Class and Order, Nat. Ord. and Generic Character, see *J. communis.*

Juniperus *sabina;* leaves opposite, blunt, glandular in the middle, imbricated in four ways; stem shrubby.

J. sabina, *Lin. Sp. Pl.* 1472. *Woodville, Med. Bot.* t. 259.

The Savine is of very similar form and mode of growth to the common juniper, but its berries are smaller, and closely surround the stalks; it is a native of the south of Europe, but grows readily in this country, when it will form a low, close, evergreen bush, three or four feet high. We learn from Turner's Herbal that it was cultivated in this country so long ago as the year 1562.—G.

The leaves of the *Juniperus sabina* have a disagreeable, bitter, and somewhat acrid taste, and yield by distillation an essential oil, possessing all their qualities in a concentrated degree. Savine is diaphoretic, stimulant, and emmenagogue. In a large dose it is said to cause abortion; and as it is frequently resorted to for that purpose, it becomes an object of interest to medical jurists. Dr Christison, treating of the subject, says: "Doubts, however, may be entertained, whether any such property is possessed by it, independently of its action as a violent acrid on the bowels. It has certainly been taken to a considerable extent, without the intended effect; of which Foderé has noticed an unequivocal example. A woman took daily, for twenty days, no less than an hundred drops of the oil, yet carried her child to the full term. (Medicine Legale, ii. 430.) The powder has likewise been taken to a large extent without avail. The same author remarks, that, if given in sufficient quantity to cause violent purging, abortion may ensue, but, unless in those cases in which there is a predisposition to miscarriage, the constitutional injury and intestinal irritation required to induce it are so great, as to be always attended with great danger, independent of the uterine disorder."* Again, "in a charge of wilful abortion, the mere possession of oil of savine would be a suspicious circumstance, because the notion that it has the power of causing miscarriage is very general and familiar with the vulgar, while it is scarcely employed for any useful purpose. The leaves in the form of infusion, are in some parts of England a popular remedy for worms."† Orfila has given the result of his experiments on dogs, from which it is obviously one of the class of acrid poisons.‡ An ointment made by boiling the leaves in lard, is a good deal used for keeping up a discharge from blistered surfaces, and for stimulating old sores.—J. D. M.

Officinal. Folia.

Officinal Preparations. Oleum Volatile, *Dub. Edin.* Unguentum, *Lond. Edin. Dub.* Extractum, *Dub.*

Dosis, *a* gr. x. *ad* ℈i. Extracti; *a* gtt. v. *ad* x. Olei Volatilis; et *a* gr. x. *ad* xv. Pulveris.

* Christison on Poisons, 530. † Ibid, 531. ‡ Toxicologie Generale, i. 725.

CROTON TIGLIUM. Cathartic Croton.

Class and Order, Nat. Ord. and Generic Character, see *C. Eleutheria.*

Croton *Tiglium;* stem arborescent, leaves ovate, acuminate, serrated, glabrous.

C. Tiglium, *Lin. Sp. Pl.* 1426.

THE plant which produces the seeds from which the croton oil is expressed is a native of various parts of India and the adjacent islands. It grows to the height of fifteen to twenty feet, forming a low handsome tree with extending branches; the bark is blackish, covered with small gray lichens.

Persoon has enumerated eighty-two species, but other botanists have removed many of them into other genera; the *Tiglium* is considered as the only species possessed of cathartic properties.—G.

The seeds of the *Croton Tiglium* were formerly used in Europe under the name of Molucca grains; they were afterwards neglected, and it is only since Dr Whitelaw Ainslie called the attention of the profession to them, that they have again been employed by European practitioners. As the following observations by Dr White seem valuable, I shall quote them at full length.

"Take the seeds of the *Croton Tiglium*, after having been each enveloped in a small ball of fresh cow-dung, about the size of a sparrow's egg, put them on some burning charcoal, and allow them to remain till the cow-dung is burnt or toasted dry, then remove them, and taking off carefully the shells from the seeds, pound the nuclei, and divide into pills, making two out of each grain; two, or at most three of which are a sufficient dose for an adult; half a drachm of honey, to two drachms of the mass proves a convenient medium for uniting it. The advantages derived from the above-mentioned process, are, in the first place, it facilitates the removal of the shell; secondly, it renders the nucleus more fit for pounding; and lastly, the gentle torrefaction it undergoes, corrects in a great degree the natural acrimony of the nut. The Tamool, Canarese, and Sanscrit names of this nut, express its quality of liquefying the contents of the intestines. An intelligent *Ioqui* from Benares, tells me, that in his country, they boil the seeds soft in milk, stripping them first of their shells; after which they pound them, forming the mass by means of lime juice, at the rate of one pill from each seed; two of these making an ordinary dose. A mode in Guzerate is still more simple, consisting merely in pounding the kernels, without any previous operation, and forming, by means of honey, two pills from each nucleus, one of which generally suffices for a strong purge; at the same time directing a gill of warm water to be taken immediately after swallowing the pill: in this preparation the inherent acrimony of the kernel,

makes up for the smallness of the dose, and the water drank above it ensures its speedy operation.

" The following directions are from a learned *Persee vydia*, of Surat.

" After having removed the shells from the seeds, tie the kernels in a small piece of cloth, like a bag; then put this into as much cow-dung-water as will cover the bag, and let it boil; secondly, when boiled, split the kernels in two, and take a small leaf (filament) from them, which is said to be poisonous; and thirdly, pound the whole into a mass, to which add two parts of *katha* (catechú), that is, to one drachm of croton, add two of *katha*, and divide into pills of two grains each; two of which are sufficient for one dose. The addition of the *katha* is said to correct its acrimony altogether, and to prevent any griping from ensuing."*

The expressed oil which is obtained from the seeds, is now very much used in obstinate constipation, and in all cases in which it is necessary to evacuate the bowels with certainty and rapidity. In doses of from one to three drops, it operates as a drastic purgative; its operation is very rapid, generally in about an hour or two after the dose has been swallowed. From the smallness of the dose, it is admirably adapted for maniacs, or for persons labouring under temporary delirium; it is not admissible in very weak habits, nor ought it to be given to children nor to pregnant women. Dr Ainslie mentions that it has been used with success as an emmenagogue.†

Dr Nimmo of Glasgow examined the croton seeds, and found that they consisted of 27.5 of acrid matter soluble in strong alcohol and in ether; 32.5 of bland fixed oil soluble in oil of turpentine; and 40 of farinaceous matter. The oil itself consists of 45 parts of acrid matter, and 55 of bland oil.

I have found that an acrid naphthous oil is produced when the oil is submitted to distillation; this oil is extremely pungent, and acts on animals as one of the acrid poisons.—J. D. M.

Officinal. (Semina).
Officinal Preparation. Oleum Crotonis.
Dosis, *a* gtt. i. *ad.* gtt. iii. Olei.

CROTON ELEUTHERIA. Cascarilla Bark Tree.

Class and Order, MONŒCIA MONADELPHIA. Nat. Ord. EUPHORBIACEÆ.

GEN. CHAR. Male flowers; *Calix* cylindrical, of five segments; *Corolla* five petals; *Stamens* ten to fifteen.

Female flowers; *Calix* five, on many segments; *Corolla* wanting; *Styles* three, bifid; *Capsule* three-celled, three-seeded.

Croton *eleutheria;* leaves ovate, accuminate, entire, smooth beneath, with silvery scales; racemes axillary; stem arborescent.

* Ainslie's Materia Indica, i. 102. † Ibid. i. 104.

Croton eleutheria

Canella alba

Ives Del.t

W.H. Lizars Sculp.t

C. eleutheria, *Willd. Sp. Pl.* iv. p. 545. *Woodville, Med. Bot.* iv. p. 2.
Clutia eleutheria, *Lin. Sp. Pl.* 1476.

A NATIVE of the Bahama and West Indian islands, growing in dry stony places; it is a low tree, seldom exceeding twenty feet in height, its stem and branches are thickly covered with whitish-grey mealy lichens, interspersed with numerous species of Opegrapha and other minute fungi. Its leaves are entire, somewhat cordate, elongated towards the apex, upper surface deep green, beneath silvery; flowers small, in axillary and terminal spikes.

The drug Cascarilla is imported in small quills, which are on the exterior white or light-grey, within of a pale cinnamon colour, and it possesses an agreeable aromatic flavour; it has been used in this country and on the European Continent ever since the year 1693. Like other newly introduced drugs, it was at first held in the highest esteem, then sank into almost total neglect.—G.

Cascarilla is aromatic, stimulant, and tonic. It was at one time considered as possessing febrifuge virtues equal to cinchona, but experience has not substantiated its claims. When combined with cinchona, it is said to increase its efficacy, and at the same time to diminish its disagreeable taste. When burnt, it gives out an agreeable odour resembling that of musk; it is sometimes smoked, either alone or mixed with tobacco. When used alone, it increases the rapidity of the pulse and the heat of the surface, and causes a degree of mental excitement which is not followed by languor. Mixed with tobacco, it lessens its sedative and nauseating effects. According to Tromsdorff, Cascarilla contains 1.6 of volatile oil, (sp. gr. 0.938) of a greenish-yellow colour, and of a penetrating odour resembling that of the bark; 15.1 of a brown resin, soft and slightly bitter; 18.7 of bitter extract, containing gum and chloride of potassium; 65.6 of woody fibre. The infusion is a dark brown, which is first rendered more intense by the salts of iron, and then changed to green. * As the volatile oil is dissipated in the preparation of the extract, it is only to be considered as a simple bitter. The infusion contains all the virtues of the bark, and is perhaps the best form in which it can be administered.—J. D. M.

Officinal. Cortex.

Officinal preparations. Infusum, *Lond.* Extractum Cascarillæ Resinosum, *Dub.* Tinctura Cascarillæ, *Lond. Edin. Dub.*

Dosis, *a* ℈i. *ad* ʒi. Corticis; *a* gr. x. *ad* ʒi. Extracti; *a* ʒi. *ad* ʒii. Tinctura; *ab* ʒi. *ad* ℥iv. Infusi.

* Berzelius, Traité de Chimie, vi. 224.

CANELLA ALBA. *White-Barked Canella.*

Class and Order, DODECANDRIA MONOGYNIA. Nat. Ord. MELIACEÆ.

GEN. CHAR. *Calix* three-lobed; *Petals* five; *Anthers* sixteen, adnate; *Nectarium* pitcher-shaped; *Berry* one-celled; *Seeds* two or four.

Canella *alba;* leaves alternate, obovate, cuneate at the base, white or glaucous beneath, somewhat coriaceous, sometimes full of pellucid dots; flowers terminal, cymose.

C. alba, *Wild. Sp. Pl.* ii. p. 851. *Swartz. in Trans. Lin. Soc.* i. p. 96. t. 8. *Woodville, Med. Bot.* ii. p. 318. *Don. Syst. of Gard.* i. p. 679.

Laurus Winteriana, *Lin. Sp. Pl.* ed. 1. p. 371.

THE *Canella alba* forms a tree, standing from ten to fifteen feet in height; its leaves are of a deep shining green above, glaucous beneath, entire, obtuse, of a thick substance like those of laurel; flowers at the extremity of the branches, small, violet-coloured, and but seldom expanding, being fleshy, smooth, black, and shining.

This species is common to many of the West Indian islands and South America; it is likewise said to be one of the largest trees growing on Terra del Fuego, attaining, on that inhospitable shore, the height of fifty feet or upwards. The bark, which is the officinal part, is aromatic, as, indeed, is the whole plant; it is of a light greyish colour, but when the epidermis is removed, it is then of a very pale yellow-brown, in which state it is imported into this country, commonly rolled into quills. The specimens figured on the accompanying plate are represented with the epidermis attached; this is usually removed by a file or rasp. The bark of the older stems have a purplish hue on the exterior, but the liber is whiter than that of the younger branches.—G.

Canella is an aromatic stimulant of considerable energy; it is rarely used by itself, but enters into several officinal preparations, and is a useful addition to some bitters which are apt to cause nausea unless combined with an aromatic. The odour and taste of Canella are very similar to nutmeg. According to an analysis by Henry, it contains an acrid volatile oil; an aromatic resin, not acrid; a coloured extract; an extractive matter soluble in boiling water; gum; starch; acetates, oxalates, and chlorides of potass and lime; and woody fibre. Petroz and Robinet have found a crystallizable sugar, and a peculiar bitter principle. To obtain these substances, they evaporated the decoction of the bark to the consistence of extract, and separated the resin which was deposited during the evaporation; they then dried the extract, and treated it with absolute alcohol, which dissolved the bitter extractive, and left the sugar in the crystalline form. To obtain the extractive pure, they evaporated the alcoholic solution, during which process a few crystals were de-

posited. They then acted on the extract, which was left by the evaporation of the alcohol, with ether, which dissolved the bitter extractive without touching the crystals. On evaporating the ether, a brown soft matter, extremely bitter, and sparingly soluble in water, was obtained. The crystalline sugar is analogous to the sugar of manna. In other respects the analysis agreed with that of Henry.—J. D. M.

Officinal. Cortex.
Dosis, *a* gr. vii. *ad* gr. xviii.

ARTEMISIA Absinthium. Common Wormwood.

Class and Order, Syngenesia Superflua. Nat. Ord. Compositæ.

Gen. Char. *Involucre* ovate or rounded, imbricated; *Receptacle* naked or hairy; *Florets* of the ray awl-shaped; *Pappus* none.

Artemisia *Absinthium;* leaves bipinnatifid, clothed with short silky down, segments lanceolate; flowers hemispherical; receptacle hairy.

A. Absinthium, *Lin. Sp. Pl.* 1188. *Fl Brit.* 864. *Engl. Bot.* t. 1230. *Woodville, Med. Bot.* ii. p. 328.

Root perennial and fibrous; stems round, channelled, growing two or three feet high, bearing at their extremities numerous drooping panicles of dull-yellow flowers; leaves bipinnatifid; the floral ones mostly entire. All our native species of Artemisia appear to possess properties identical with the present plant, only differing in the greater or lesser degree of bitterness for which all the family are proverbial, but for medical purposes this alone is worth the attention of the practitioner.—G.

Wormwood has a nauseous smell, and an extremely bitter taste; it is stimulant, tonic, and anthelmintic; and is applied to bruises to prevent discoloration; cataplasms made with its infusion are often useful in gangrenous and putrid sores. It contains an essential oil, which has the nauseous smell of the plant. The extract is merely a simple bitter, and has not the disagreeable odour. According to Braconnot, wormwood is composed of 0.150 of volatile oil; 0.5 of green resin; 0.23 of bitter resin; 1.250 of vegetable albumen; 0.133 of starch; 1.333 of an animalized substance having little taste; 3.000 of animalized substance having an extremely bitter taste; 10.833 of woody fibre; 0.333 of nitre; 0.917 of a salt of potass containing a particular acid which has been called the Absinthic; traces of sulphate and chloride of potass; 61.233 of water.

In the extract sold in the shops, Leonhardi found 79.4 of a gummy matter; 5.04 of a resinous substance soluble in the carbonate of potass; 15.6 of bitter extractive soluble

in alcohol and in water. * Wormwood is not often prescribed, but it is often used by the country people as an anthelmintic.—J. D. M.

Officinal. Cacumina.
Officinal preparation. Extractum Absinthii, *Dub.*
Dosis, *a* ℈i. *ad* ʒi. Herbæ; *a* ℈ss. *ad* ʒss. Extracti.

ASARUM EUROPÆUM. Asarabacca.

Class and Order, DODECANDRIA MONOGYNIA. Nat. Ord. ARISTOLOCHIÆ.

GEN. CHAR. *Perianth* single, three cleft, superior: *Capsule* six-celled.

Asarum *Europæum;* leaves in pairs, reniform, obtuse.

A. Europæum, *Lin. Sp. Pl.* 633. *Fl. Brit.* 509. *Engl. Bot.* t. 1083. *Woodville, Med. Bot.* ii. 237. *Hooker, Br. Fl.* p. 217.

THIS species grows in woods, and is but rarely found except in the north of England, in Yorkshire, Westmoreland, and Lancashire, and near Linlithgow in Scotland. My specimens I obtained from a wood near Halifax, Yorkshire, where it grew in profusion, but as it was much sought after by medical men, it is to be feared it has been extirpated. From the crown of the perennial root, the leaves grow out in pairs on long foot-stalks, and from the axil of these springs the solitary flower, which is of a lurid purple, drooping, and of a coriaceous texture. The whole plant attains only a few inches in height; the leaves are of a full bright green, and afford a good example of a reniform leaf. It produces its large but inconspicuous flower in May, which often continues on the stems till the fall of the year. Five species are mentioned in Loudon's Hortus Britannicus, all of which are natives of North America except the present plant.—G.

The root of the Asarum is one of the most powerful errhines which we possess, the leaves also are sternutatory, but are much milder than the root. Given internally in doses of forty or fifty grains it causes vomiting and purging; the alcoholic tinctures are said to act in this way, but the extracts made by inspissating them act only as emetics. Aqueous decoctions and extracts are said to have neither purgative nor emetic properties, but to possess diuretic, diaphoretic, and emmenagogue virtues. † It would seem from this statement, that the purgative and emetic qualities depend on a volatile principle, but as chemists have found a fixed active principle (*Cytisine*), which acts energetically both as an emetic and purgative, the statements above-noticed must be looked upon as partly imaginary. According to an analysis by Lassaigne and Fenuile, the Asarum contains a concrete volatile oil; an acrid fixed

* Berzelius, Traité de Chimie, vi. 246.

† Duncan's Dispensatory, 255.

oil; a yellow substance analogous to *Cytisine*, and which they consider to be the active principle; starch; mucilaginous extractive; citric acid; acid citrate of lime; various salts.* Drying is said to destroy the emetic property of the *Asarum*, though its properties as an errhine are not injured by this process. When intended for internal use it ought to be prescribed while recent.—J. D. M.

Officinal. Folia.

Officinal preparation. Pulvis Asari Compositus, *Edin. Dub.*

Dosis, *a* gr. v. *ad* x. Pulveris Compositi pro Sternutamento; *a* ℈ij. *ad* gr. L. Radicis Recentis pro Emetico.

ARNICA MONTANA. *Mountain Arnica.*

Class and Order, SYNGENESIA SUPERFLUA. Nat. Ord. COMPOSITÆ.

GEN. CHAR. *Receptacle* naked; *Pappus* simple; *Calix* with equal leaves; *Florets* of the ray generally with five filaments without anthers.

Arnica *montana;* leaves ovate, entire; cauline leaves in pairs, opposite.
A. montana, *Lin. Sp. Pl.* 1245. *Woodville, Med. Bot.* i. p. 10. t. 4.

A HARDY perennial, common to the mountainous parts of Europe, preferring moist shady situations; introduced into Britain in 1731. Stems about a foot high, roundish, rough, and hairy; flowers large, shewy, each on a separate stalk; of a full yellow, or dull gold colour; root leaves oval, narrowing at their bases; cauline leaves sessile.

This species, which is often called leopards-bane, (a name applied to a nearly allied genus, *Doronicum*), is of easy culture, and increases readily by its roots; the flowers sometimes are of a brownish, and at others of a greenish hue. Four species are enumerated.—G.

When given in small doses, the flowers of the *Arnica* are stimulant, emmenagogue, and antiseptic. In large doses, they give rise to anxiety, vertigo, vomiting, and purging, and even to coma. In countries where the plant is indigenous, infusions of all parts of it are popular remedies in internal contusion, in concussion of the brain, &c. In Germany, several authors of eminence have recommended the exhibition of the flowers in remittent and intermittent fevers, and in paralytic affections. Neumann of Dresden says that he has cured cataract by the internal use of the *Arnica*, but he at the same time used a collyrium, containing acetate of ammonia, in union with the *Arnica*. This plan of treatment I should not think deserving of repetition, as it seems founded on no rational plan. Rheumatism, inflammation of the kidneys, and a variety of other diseases of completely opposite characters, are said to have yielded to the

* Dictionnaire des Drogues, i. 356.

use of this plant. The root and leaves are powerful errhines, especially when fresh. The root acts in the same way as the flowers when given internally, but is more energetic. It was at one time supposed to owe its medicinal properties to the presence of *Strychnia;* but Chevalier and Lassaigne have discovered a proximate vegetable principle, analogous to, or identical with, *Cytisine*, which was first obtained from the Laburnum, and which I have before mentioned as having been found by me in the broom, *(Cytisus scoparium)*. Berzelius gives the following process for preparing *Cytisine* from the Laburnum seeds. An alcoholic extract is to be prepared from the seeds; this is to be acted on with water till all the soluble matter be taken up; the solution is to be precipitated by acetate of lead; the precipitate is to be separated by filtration, and the excess of lead removed by sulphuretted hydrogen. The liquid is then to be filtered and evaporated; a yellowish-green extract remains, bitter, and forming precipitates with subacetate of lead, and with nitrate of silver. Peschier regards *Cytisine* as identical with *Cathartine.** In preparing *Cytisine* from the broom, I adopted the above process, with some slight modifications. —J. D. M.

Officinal. Flores et Radix.

Dosis, *a* gr. v. *ad* x. Florum; et *a* gr. iv. *ad* viii. Radices.

INULA HELENIUM. Elecampane.

Class and Order, Syngenesia Superflua. Nat. Ord. Compositæ.

Gen. Char. *Involucre* imbricated, its scales spreading, outer ones especially, foliaceous; *Anthers* with bristles at their base; *Receptacle* naked; *Pappus* simple: *Flowers* yellow.—*Hooker.*

Inula *Helenium;* leaves amplexicaul, somewhat toothed, ovate, wrinkled, downy beneath, scales of the involucre ovate, downy.

I. Helenium, *Lin. Sp. Pl.* 1236. *Fl. Brit.* 891. *Woodville, Med. Bot.* ii. p. 297. t. 108. *Engl. Bot.* t. 1546. *Hooker, Br. Fl.* p. 362.

Elecampane is occasionally found growing wild in various parts of the British islands; is a hardy perennial, and readily increases by its roots, which are thick and large. The stems grow from three to five feet high, round, leafy and branching at the top; leaves large, ovate, slightly serrated, green above, hoary beneath, those on the stalks sessile and embracing the stem, the radical ones frequently a foot or more in length, growing on petiols;

* Berzelius, Traité de Chimie, vi. 318.

flowers large, terminal, of a full yellow colour. This species is found in most parts of Europe.—G.

Elecampane root has a pleasant aromatic odour, and a bitterish, though not unpleasant taste; it is tonic, emmenagogue, diuretic, and sudorific. It is given in the form of powder, of decoction, and of vinous tincture. Little use is made of it by British practitioners. According to John, it contains a trace of volatile oil; 0.3 or 0.4 of *helenine*; 0.6 of wax; 1.7 of soft acrid resin; 36.7 of bitter extract soluble in water and in alcohol; 4.5 of gum; 36.7 of *inuline;* 13.9 of coagulated albumen mixed with extractive; 5.5 of woody fibre; potass, lime, and magnesia combined with the vegetable acids. *Helenine* was discovered by Lefébure and Geoffroy the younger. When the root of the *Inula* is submitted to distillation, the *helenine* passes over with the water in the form of a yellowish oil, which sinks to the bottom and concretes; it can be purified by re-distillation with a little water, or by being dissolved in boiling alcohol, from which it crystallizes as the alcohol cools. It can also be obtained by making an alcoholic decoction of the root, which, when perfectly cold, yields the *helenine* in a crystalline form, but impure; it can be purified by distillation as above-mentioned. When pure, it is in the form of crystalline plates of a very light-yellow colour, soft and unctuous to the touch. It is heavier than water, and is scarcely soluble in that fluid either when cold or warm. It is sparingly soluble in cold, but readily so in boiling alcohol, from which it is again deposited on cooling; at 109° F. it melts, and at a more elevated temperature it sublimes without leaving any residue. It is soluble in ether and in oil of turpentine. * Nitric acid converts it into a resin.

Inuline was discovered in the elecampane by Rose, it has also been named *helenine*, *alantine*, *datinine*, and *dahline*. The name of *helenine* is of course no longer applicable, as it has been given by John to the substance described above. *Inuline* is nearly allied to starch.—It is prepared thus: The root is to be scraped, bruised, and boiled with water, the decoction is to be filtered through linen, if it be not clear, it is to be filtered through paper. It is then to be evaporated till a pellicle be formed; as it cools, the *Inuline* is deposited in the form of white grains, somewhat crystalline in their appearance. These are to be collected on a filter; to be well washed with cold water, and then dried. It can be obtained from several other roots; 10 per cent. are contained in the *Dahlia;* 3 in the *Topinambour;* 11 in the *Inula Helenium;* 12 in the *Leontodon Taraxacum;* and 12½ in the *Cichorium Intybus*. *Inuline* is white, pulverulent, without smell or taste, when heated to about 212° F. it loses the water which it contains, and enters into fusion, on cooling it forms a greyish scaly brittle mass of a sweet mucilaginous taste, yielding to alcohol a brownish extract, and to water a gum soluble to any extent. Cold water dissolves about a 50th part of its weight of *Inuline*, boiling water dissolves it in large quantity, and forms a mucilaginous solution, from which on cooling it is partly deposited in a pulverulent form. It is insoluble in cold alcohol; boiling alcohol dissolves a small quantity, which it deposits on cooling. The acids act readily on *inuline*, converting it into sugar; this change is more easily affected than in common starch. Nitric acid converts it into malic and oxalic acids, without a trace of nitric acid. It is soluble in caustic potass, but it is precipitated from it on the addition of an acid. If infusion of galls

* Berzelius, Traité de Chimie, v. 437.

be added to a solution containing both starch and inuline, a precipitate is formed, and whichever is in excess remains in solution; by boiling, the precipitate is redissolved.* —J. D. M.

Officinal. Radix.
Dosis, *a* ℈i. *ad* ʒi.

HORDEUM DISTICHON. *Barley.*

Class and Order, TRIANDRIA DIGYNIA. Nat. Ord. GRAMINEÆ.

GEN. CHAR. *Calix* two-valved; *Valves* lateral, one-flowered, growing three together, the lateral one with anthers or pistils, intermediate ones perfect; *Corolla* two-valved.

Hordeum *distichon;* lateral florets male, beardless; hermaphrodite, in two rows, bearded.
H. distichon, *Lin. Sp. Pl.* 126. *Host. Gram.* 3. t. 36.

BARLEY is considered to be a native of Tartary, and supports the rigours of the colder climates better than any other of the cereal grasses; and, in the more northern parts of Europe, is the only grain that can be cultivated. In such situations, its rapidity of growth is commensurate with the duration of their short-lived summers; being often sown and reaped in the short space of six weeks. Like wheat and oats, this plant constitutes a large portion of the food of the inhabitants where it grows, and its medical uses are of a secondary nature. The principal consumption of barley in Great Britain is for the purpose of malting, either for the use of the brewer or distiller. There are three kinds in cultivation,—the two, four, and six rowed; the latter kind is much grown in Scotland, where it is usually known by the appellation of bear or bigg; and from its yielding a less quantity of spirit when distilled than the common barley, was subject to a diminished duty; but as this afforded an easy method of defraud on the revenue, the duty is now paid on the exact quantity of spirit produced of a certain specific gravity. Eighteen species, and two varieties, are enumerated in Loudon's Hortus Britannicus, but it is doubtful if several of these are more than varieties; three species are natives of Britain, but their seeds are so small, as not to be classed with those commonly denominated grains.—G.

Barley is used as aliment in various parts of France, in the Highlands of Scotland, and in the north of Europe. The bread prepared from it is less nourishing than that prepared from wheat. Whether taken in the form of bread or pottage, it acts on many persons as a gentle laxative, and is occasionally prescribed in cases of habitual constipation

* Berzelius, Traité de Chimie, v. 209.

with that view. The decoction of barley, which is familiar to most persons under the name of "barley water," is an excellent diluent in fevers, and inflammatory diseases; it is a valuable remedy in diarrhœa, where there is a deficiency of the natural mucous secretion, or when an acrid secretion has supplied its place. The analysis of barley has been undertaken by many eminent chemists. Einhof gives the following results: In ripe barley, water, 11.20; husk, 18.75; meal, 70.05. By kneading the meal in a linen bag, through which a stream of water passed, he found that 100 parts gave 67.18 of starch and gluten, and that 7.29 of vegetable fibre, mixed with a little starch and gluten, remained in the bag. When the liquid which deposited the starch and gluten was heated to the boiling point, it gave 1.15 of coagulated albumen; it was then evaporated to the consistence of extract and acted on with alcohol, which dissolved 3.52 of gluten, and 5.21 of sugar. Einhof separated these from each other by adding water to the alcoholic solution, and then distilling off the alcohol. The gluten was deposited by the water which remained in the retort, and the sugar (which was uncrystallized) was retained in solution. The alcohol left 4.62 gum; and 0.24 of phosphate of lime undissolved. By the above analysis barley is composed of

Starch and gluten, -	70.70
Vegetable fibre, -	7.29
Albumen, - -	1.15
Sugar, - - -	5.21
Gum, - - -	4.62
Phosphate of lime, -	0.24
Water, - - -	9.37*

According to Proust,

Resin, - - -	1
Gum, - - -	4
Sugar, - - -	5
Gluten, - -	3
Starch, - -	32
Hordein, - -	55†

Proust's analysis of malted barley:

Resin, - - -	1
Gum, - - -	15
Sugar, - - -	15
Gluten, - -	1
Starch, - -	56
Hordein, - -	12‡

Hordein is supposed by Proust to be a distinct principle; other chemists have not in general recognized it as such, but have regarded it as a mixture of starch, gluten, and husk.

* Berzelius, Traité de Chimie, vi. 323.

† Turner's Chemistry, 607.

‡ Ibid.

The process of malting is this: The grain is soaked in water till it become soft, and till the water acquire a reddish colour. It is then taken out and allowed to drain; when sufficiently drained, it is laid in a heap, and allowed to remain for about fifteen or sixteen hours, by which time, if the soaking has been properly conducted, it will begin to push out radicles; it must then be turned over frequently, to prevent the growth of the blade. It may be allowed to remain thus for about forty hours. It is then spread out to a depth not exceeding five inches, and constantly turned for forty-eight hours; by this means the grain is cooled and dried, is rendered of easy separation from the husk, and of greater solubility. It is now put into heaps, which are allowed to heat till the temperature is raised as high as the hand can bear; this generally takes place in about thirty hours. It is then again turned over and cooled, and lastly laid on a kiln and dried. Upon this part of the process depends the colour and name of the liquor afterwards prepared from it. For making ale, the malt is only dried; for making porter, the drying is carried so far as partly to roast the grain. The operation of brewing is exceedingly simple. The malt is digested for two or three hours in hot water, and this is repeated till the greater part of the soluble part is extracted. Hops are added at this part of the process if required. The united infusions are then boiled to the requisite strength, cool yeast is added, and the fermentation allowed to proceed to a certain length; the liquid is then put into casks, and allowed to remain there for some time, before being bottled or drawn off for use. Though the process is simple, yet the modifications are very numerous, and a great deal depends upon very slight variations, as the different qualities of the porter, ale, &c. from different breweries will sufficiently prove. In preparing malt spirit the first steps of the process are nearly the same as in brewing. When the fermentation has reached the proper point, the wort (that is the fermenting infusion of the malt) is run into the still, heat is applied, and the distillation is carried on till nearly all the spirit has run over; the first portion, which is fiery, and the last, which is weak, are united and reduced to a proper strength. In this way, Whisky and Usquebagh, the national spirits of Scotland and Ireland, are prepared. In both countries an inferior spirit is made from unmalted grain; the greater part of that made in Scotland is sent to the English market, where it is manufactured into gin. The alcohol which is used by British chemists is grain spirit, deprived of its essential oil as much as possible, and rectified to a proper strength.—J. D. M.

Officinal. Semina.

Officinal preparations. Decoctum Hordei, *Lond. Edin. Dub.* Decoctum Hordei Compositum, *Lond. Dub.* Cerevisiæ Fermentum, *Lond. Edin.*

Dosis, *a* lbi. *ad* lbij. Decocti et Decocti Compositi; *ab* ℥i. *ad* ℥ii. Cerevisiæ Fermenti.

TRITICUM HYBERNUM. Wheat.

Class and Order, TRIANDRIA DIGYNIA. Nat. Ord. GRAMINEÆ.

GEN. CHAR. "*Calix* two-valved, many-flowered, valves opposite, transverse, the sides (not the back) of one of them directed to the rachis, nearly equal; *Corolla* two-valved, valves lanceolate, exterior one accuminate or awned at the extremity; interior one bifid at the point."—*Hooker.*

Triticum *hybernum;* calix four-flowered, swollen, smooth, imbricated; awns short, or wanting.

T. hybernum, *Lin. Sp. Pl.* 126. *Host. Gram.* ii. t. 26. *Loudon's Ency.* p. 68.

THIS well-known plant, so universally cultivated, is supposed to have originally been introduced into Europe from Asia; but, from long culture, is most probably so altered in its appearance as not to be recognized in its native state. There are a considerable variety of kinds in general cultivation; the one retained in the modern pharmacopœias is known to agriculturists as the winter or Lammas wheat, and contains a larger proportion of starch than any of the others.

Wheat forms the staple commodity for the manufacture of bread in this country, and is capable of cultivation in most parts of England, where the elevation does not exceed 1000 or 1200 feet above the sea-level. In Mr Winch's Geographical Distribution of Plants through Northumberland and Durham, we are informed that the highest elevation at which wheat is now cultivated in the north of England does not exceed 1000 feet; and, from the agricultural survey of Forfarshire by Headrick, we learn that it is cultivated to 800 feet above the sea in that county.

The eastern counties of England are said to produce the finest wheat, particularly Kent, Essex, and Suffolk. Wheat is less liable to the disease called ergot than some other kinds of grain, but is occasionally subject to it. It is often greatly injured by a parasitic fungus, *Uredo frumenti.* This, though highly detrimental to the growth and perfection of the seed, does not appear to have any positively deleterious effect on the grain; but, by absorbing a large portion of the juices of the plant that should have nourished the seed, when this ripens it is thin, and is deprived of the greater part of its nutritive qualities.

This genus is divided into annual and perennial species, which by some authors have been formed into separate genera. The annual, or such as produce bread-corn, called *Triticum;* the perennial, or grass-like plants, *Agropyrum.* Of the former kind thirty-one species are enumerated, and of the latter thirty-two; of these last four species are common to Britain.—G.

In Britain wheat bread forms a large proportion of the food of both the higher and lower classes. In the Highlands of Scotland, in Wales, and some of the English counties, oat and barley bread form a principal part of the food of the poorer classes, and wheaten bread is looked upon as a luxury, rather than as a necessary of life. This is particularly the case in some of the more remote of the Highland counties of Scotland. Bread is made by kneading the flour into a stiff paste with water; yeast, or some other ferment, is then added, and the fermentation is allowed to proceed to a certain point. During the fermentation a quantity of carbonic acid gas is evolved, the toughness of the paste prevents its escape, and the heat of the oven expands it, and in this way the bread is rendered light and spongy. The oven is heated to about 490° F. A quantity of muriate of soda is added to the mass of dough to render it sapid. The various qualities of bread show, that, though the process is extremely simple in theory, it requires both attention and experience to carry it into practice successfully. Various adulterations are practised in the manufacture of this article; some of such magnitude as to have called for the attention of the legislature at various times. The adulterations are of various sorts. Some are intended to make a coarse flour assume the appearance of the finest; for this purpose alum is used. Others to increase the weight; among the most prevalent of these is the admixture of bone dust. The most curious adulteration with which I am acquainted is that mentioned by Professor Christison in his work on poisons, as having been very common in France. I shall quote the article at full length:

"A singular variety of adulteration with copper has lately been brought into public notice on the continent,—namely, the impregnation of bread with the sulphate of copper, which is used in small quantity for promoting the fermentation of the dough. This practice was first detected in some of the towns of Flanders, but has also been since found to prevail in France. Some chemists of reputation have indeed doubted altogether the existence of the practice; and *M. Barruel* in particular, who was consulted on the subject by the Prefecture of Paris, has publicly declared his disbelief, because he remarked that, instead of favouring the panary fermentation, a very small proportion of sulphate of copper actually impeded it, and besides gave the bread a greenish colour of such depth that no customer would take it for a wholesome article. Subsequent inquiries, however, have shown that Barruel must have allowed himself to be misled, probably by using too much of the sulphate of copper. For the bakers of St Omer have admitted that they practice this adulteration for the sake of saving their yeast, the proportion required being an ounce of the salt in two pints of water for every hundred weight [*quintal*] of dough, or about an 1800th part. And it appears from an interesting set of experiments by *M. Meylink*, a chemist of Deventer, that, contrary to the statements of Barruel, sulphate of copper not only possesses the property of promoting the panary fermentation, but likewise constitutes in several important respects a source of adulteration, which ought to be prohibited and strictly looked after. He found that when he added to half a Flemish pound of dough from one grain to eight grains of sulphate of copper, fermentation took place more quickly than in the same dough without such addition, and nearly in proportion to the quantity of the salt used;—that the adulterated loaves when taken out of the oven were much better raised, and the loaf with only one grain of the salt likewise much whiter, than those which were not adulterated;—that a slight increase, how-

ever, in the proportion rendered the loaf greenish, and gave it a peculiar taste;—but especially that the employment of the salt of copper even in the small proportion of one grain had the singular effect of bringing about the complete fermentation of the dough with considerably less loss of weight than occurs in the common process of baking, the loss in the sound and in the adulterated loaves being in the proportion of 116 to 100. It certainly seems fully proved, then, that the adulteration of bread with sulphate of copper is an important fraud in more ways than one. Some doubt may be entertained whether any injury can result to the human body from even the habitual use of so small a quantity as is employed by the bakers; and, at all events, we may be satisfied that if any bad effects do result, this can only happen from the continual use of the adulterated bread for a great length of time. But there can be no doubt that the practice is a serious fraud on the public, by enabling the baker to make his loaves of the standard weight with a less allowance of nutritive material."*

Carbonate of ammonia is also extensively used in the preparation of bread, but it is hardly to be looked upon as an adulteration. Potatoes and potatoe starch are also employed. Bread is sometimes used in the form of cataplasm made either with milk or water. A pleasant drink is made by infusing toasted bread in hot water; it is much used by dyspeptic persons, and in fevers and inflammatory diseases. Wheat-flour contains a much larger quantity of gluten than the flour of any other grain; to this it owes its superior nutritious properties. Gluten was long supposed to be a simple substance, but M. Taddei succeeded in separating it into two portions by means of alcohol; to one portion, soluble in that fluid, he gave the name of *Gliadine;* to the other, which was insoluble, he gave the name *Zymome.* Gluten approaches more nearly to animal matter than any vegetable principle with which we are acquainted. Starch, or amidon, is prepared from wheat-flour; the process is as follows: A small stream of water is allowed to fall on the dough of wheat-flour inclosed in a linen bag, to which gentle pressure is applied; the process is continued as long as the water passes over milky. The gluten remains in the bag, the mucilaginous and saccharine matters pass over in a state of solution, and the starch is deposited in the form of a white powder, insoluble in cold, and forming a gelatinous solution with boiling-water. Iodine is the best test for the presence of starch. Our limits will not allow of the chemical history being entered into at greater length. Those who wish for more accurate and extensive information will find it in the Annales de Chimie et Physique, vol. xxxi.; in the Journal de Pharmacie, vol. iii.; in Berzelius, Traité de Chimie, v. 195 to 210; in the Dictionnaire des Drogues, i. 285 to 291, &c.

Analysis of wheat according to Proust.

Starch, - - -	74.5
Gluten, - - -	12.4
Gummy extract and sugar,	12
Yellow resin, - -	1

According to Vogel.

Starch, - -	68
Gluten (not dried,) -	24
Gum and sugar, -	5
Vegetable albumen, -	1.5†

Officinal. Semina. J. D. M.

* Christison on Poisons, 409–11.

† Richard, Histoire Naturelle Medicale, i. 326.

AVENA SATIVA. Cultivated Oat.

Class and Order, TRIANDRIA DIGYNIA. Nat. Ord. GRAMINEÆ.

GEN. CHAR. *Panicle* lax; *Calix* two-valved, two-flowered; *Corolla* of two lanceolate valves, firmly enclosing the seed; exterior one bearing a twisted dorsal *awn*; upper florets often imperfect.—*Hooker.*

Avena *sativa;* panicle equal; spikelets two flowered; florets smaller than the glumes, naked at the base, bearded; root fibrous.

A. sativa, *Willd. Sp. Pl.* 446. *Host. Gram. Aust.* ii. t. 59.

THE cultivated oat is an annual plant; and the uses to which it is applied are too numerous and common to require notice in this place, as it falls under our notice more as an article of food than medicine. It has been long cultivated in Great Britain, particularly on light soils; but its value as food is not so much appreciated in the south as in the north of England and Scotland.

Its native country is unknown; but as it bears the cold of the more northern climates, it is probably indigenous to the colder parts of Europe. Nineteen species are enumerated by Loudon, besides a considerable number that have been transferred to the genus *Trisetum.*—G.

The oat is much less nourishing than wheat. The meal boiled with water to the consistence of paste is much used in Scotland under the name of "porridge," and in some parts of England under the name of "burgou." Made into cakes, it forms the staple household bread in the north of Scotland. No yeast is used in the preparation of this bread; it is prepared by kneading the meal into a paste with cold water, and afterwards rolling it into thin circular pieces, which are fired on an iron plate hung over a common fire; no oven is ever used.

According to Vogel, 100 parts of the seeds consist of 66 of meal and 34 of husk. The meal contains 2.0 of fixed oil of a greenish yellow colour; 8.25 of a bitterish extract, containing sugar; 2.5 of gum; 4.30 of a grey substance, approaching more nearly to vegetable albumen than to gluten; 59 of starch; and 29 of moisture.* Davy gives a different result; according to him the flour, or meal of the oat, contains 6 per cent. of gluten.† A decoction prepared from the ground grain is much used in febrile diseases as a diluent; it is known by the name of "gruel." Cataplasms made by boiling the meal in water to the consistence of paste are useful in phlegmonous inflammation, and in all cases in which such applications are indicated. Sinapisms are very easily and economically prepared by merely sprinkling the surface of such a cataplasm with mustard.—J. D. M.

Officinal. Semina.

* Berzelius, Traité de Chimie, vi. 301. † Dictionnaire des Drogues, i. 366.

Secale cereale.

G. Graves del.t

W.H. Ears sculp.t

SECALE CEREALE. *Rye.*

Class and Order, TRIANDRIA DIGYNIA. Nat. Ord. GRAMINEÆ.

GEN. CHAR. *Spikelets* in each tooth of the rachis solitary, two or three-flowered; the two lower florets fertile, sessile, opposite, the upper abortive; *Glumes* subulate, opposite, entire, shorter than the florets; lower *Paleæ* entire, with a very long bristle, upper bifid-toothed; *Scales* obovate, hairy; *Seed* coated, furrowed.

Secale *cereale;* glumes and beard rough; paleæ smooth at the end.

S. cereale, *Willd. Sp. Pl.* 471. *Host. Gram. Aust.* ii. t. 48.

S. cereale vel cornutum.

THE rye falls under the notice of the medical practitioner from the circumstance of its producing the drug denominated *Ergot of Rye;* this substance is the seed in a state of disease, particularly common to a large variety of grasses. In the specimen figured on the annexed plate, will be observed one which I sowed, and after about two weeks it had swollen considerably, but no exterior sign of vegetation appeared; on cutting it lengthways, it appeared as if an attempt at vegetating had been made, but it was quite decayed. In two others the plumule had pushed out beyond the coating of the seed, but only formed a kind of fungous protuberance, which in a short time became quite putrid, with a peculiar odour, like decaying animal matter. In rye grown in this kingdom, ergot rarely attains the size of our smallest specimen at fig. 8, but in American specimens, which we have been favoured with by the kindness of Mr Duncan, and also by Mr Lindsay, chemists, of Edinburgh, the size is as figured on the plate. The spike, fig. 1, is from Canada; fig. 3, with fine specimens of Ergot, from East Florida; and fig. 2. British.

As above remarked, various species of grass are subject to this disease, and during the last year I gathered numerous specimens of the under-mentioned kinds all ergotized;* nor does this disease appear confined to grass alone, as I gathered several heads of *Juncus conglomeratus* and *glaucus*, in both of which a similar appearance prevailed. These rushes are subject to the attacks of some species of insect which deposits its egg in the clusters of flowers, and the larva, after consuming the seed, assume the chrysalis form, in which state they much resemble ergot, except in colour, but on examination their nature is readily discovered. I am strongly disposed to believe that the ill name bestowed on *Lolium temulentum* is not from any bad quality inherent in the grass, but may have arisen from the seeds being ergotized.—G.

In many parts of continental Europe, the rye forms a principal part of the food of the inhabitants; in some seasons and in particular districts the grain is subject to a disease which

* *Alopecurus pratensis, A. geniculatus, Phleum pratense, Holeus mollis, H. lanatus, Arrhenatherum avenaceum, Poa fluitans, trivialis, pratensis; Dactylis glomerata, Cynosurus cristatus; Festuca pratensis; Bromus asper, giganteus, mollis, Arundo Phragmites, Elymus arenarius; Hordeum murinum; Triticum repens, junceum; Lolium perenne.*

PLATE 32.

renders it highly poisonous to man and animals. Some animals do not seem easily affected by it; others, among which are swine, geese, fowls, &c. are affected with diarrhœa, vertigo, and latterly with suppurating tumours and gangrene. Two distinct diseases are caused by the habitual use of the ergotized grain. One, the *Ergotisme convulsive* of the French; the other, the *Gangrene sêche* of the same authors. The first form of the disease commences with vertigo, dimness of sight, and loss of feeling, followed by cramps and convulsions of the whole body, *risus sardonicus*, yellowness of the countenance, excessive thirst, excruciating pains in the limbs, and dull, small, and imperceptible pulse. When the symptoms are of this aggravated nature, the disease generally proves fatal in from twenty-four to forty-eight hours. In milder forms, the convulsions come on in paroxysms, and are preceded for some time by lassitude and the feeling of insects crawling on the surface of the body; in the intervals the appetite is voracious. The pulse and excretions are natural; the disease either terminates in recovery, preceded by scattered suppurations, cutaneous eruptions, anasarca and diarrhœa, or it ends fatally amidst prolonged sopor and convulsions. The next form of the disease,—the dry gangrene, commences with general uneasiness, weakness, and a feeling of insects crawling over the skin. When these symptoms have continued for some days or weeks, the extremities become cold, stiff, white, and benumbed, and so insensible that deep incisions are not felt; excruciating pains supervene, with fever, headach and bleeding from the nose; finally, the affected parts gradually shrivel and drop off by the joints; healthy granulations succeed, but the system is frequently so worn out that the person dies before this favourable change occurs. The appetite continues voracious throughout. Various other modifications of this formidable epidemic have been observed in Germany and Switzerland. From the improved state of agriculture, the disease is becoming more rare, though some cases have occurred in Germany since the commencement of the present century. Another very peculiar property has been attributed to the ergot of rye; it is that of exciting the action of the uterus when dormant from protracted unsuccessful efforts to expel the child. This property is supported by the testimony of many accoucheurs; but it is a remedy which ought to be given only in urgent cases, and in the most careful and guarded manner. It has been said to have the power of causing abortion; but it is the opinion of the best authorities, that it only possesses the property of increasing the action of the uterus when it has already commenced, and that it has no power of inducing uterine action in the early months of pregnancy, at least not without causing constitutional disturbance of a very dangerous nature.* The cause of the ergot is not ascertained; it is by some supposed to arise from the puncture of an insect, by others it is said to arise from the presence of parasitical fungi.

According to Vauquelin, it contains a soft acrid resin of a brown reddish colour, having the smell of fish oil; a white bland oil obtained by expression; a violet colouring matter, which dyes wool and silk of a reddish yellow; a large quantity of an animalized matter insoluble in alcohol, soluble in water, and precipitated by infusion of galls, this substance enters readily into putrefaction, and has the smell of putrid fish. Ergot contains neither starch nor sugar, but it contains a free acid analogous to the phosphoric.† Petenkofer supposed that he had obtained morphia from the ergot.—J. D. M.

Officinal. Semina Morbida.

Dosis, gr. viii. *ad* xv.

* The above account is taken from the article Ergot in Dr Christison's work on Poisons.

† Berzelius, Traité de Chimie, vi. 347.

Colchicum autumnale

G. Graves Del.t

COLCHICUM AUTUMNALE. Meadow Saffron.

Class and Order, HEXANDRIA TRIGYNIA. Nat. Ord. MELANTHACEÆ.

GEN. CHAR. *Perianth* single, tubular, very long, rising from a spathe; *Limb* campanulate, six-parted, petaloid; *Capsule* three-celled; *Cells* united at the base.

Colchicum *autumnale;* leaves plane, broadly lanceolate, erect.

C. autumnale, *Lin. Sp. Pl.* 485. *Fl. Brit.* 399. *Engl. Bot.* t. 133. *Woodville, Med. Bot.* iii. p. 483. *Hooker, Br. Fl.* p. 171.

BULB solid, gibbous, outer skin dry, smooth, deep chestnut colour; beneath this, the fleshy coat is covered with a thin pellicle of a bright brown, with parallel lines; a deep groove, commencing at the base of the root, extends its whole length, along which the flowers ascend; leaves long, plane, sheathing, the inner ones narrower; tube white, very long, narrow, often exceeding six inches in length, surrounded at the base with a membranous sheath; stamens inserted into the segments of the flower; germen situated at the base of the bulb; styles continuing the whole length of the tube; capsule of three cells, united at the base; seeds round and flattened.

Few of our native plants have a more curious mode of fructification than the meadow saffron; towards the close of autumn, its delicate purple flowers appear and expand in succession, continuing in blossom for some weeks; when this is past, the flowers become dry and withered, but do not fall off until the following year. The leaves appear early in the spring, and with them arises the fruit-stalk, bearing on its summit two or three capsules; those in the young state are situated on the crown of the young bulb, as at Figure 3, and remain quite dormant during winter. With the advancing year, the leaves and stem elongate, and the styles, which were persistent on the germen, show a tendency to decay, and before the capsules emerge from the ground are entirely withered. The capsules continue enlarging, and the stem increasing in length with the leaves, until they arrive at maturity, when they are nearly the size of a pigeon's egg. The seeds ripen about June or July, when the leaves assume a pale hue, and in a few weeks afterwards entirely disappear; the bulb which produced them is then dry and hard, but does not perish the same year, so that each bulb may be correctly called a biennial.

The roots possess but little of their active properties during the autumn, but in the spring and summer are in their greatest vigour, and should be dug up for use and quickly dried.

Colchicum is found in moist meadows in various parts of England, and is said to have been found near Alloa in Scotland. I have never seen it more abundant than in some extensive fields on the banks of the Ouse, about three miles west of York, called Clifton Ings. It grows readily in gardens, with double white as well as purple flowers; and some that I had

occasion to examine in the month of December last, and from which part of the accompanying figures were drawn, were as acrid as I ever met with them.—G.

The bulb of the Colchicum, when fresh, contains a milky viscid juice, which possesses extreme acridity, inflaming the mouth, tongue, and fauces when applied to them, and causing considerable irritation of the mucous membrane. When taken into the system, various effects are produced, depending both on the quantity given, and on the constitution of the person who takes it. In small doses, it usually acts as a diuretic, and with this view it has been strongly recommended by Stoerk and other German authors in anasarca, hydrothorax, &c. In somewhat larger doses, it acts both as a sedative and cathartic. In cases in which small doses have been continued for a length of time, and where their effects have been allowed to accumulate, symptoms of the most violent nature, such as vomiting, colic, purging, sometimes of blood, tremors, cold sweats, fainting, and delirium, present themselves, and several fatal cases are recorded.* In some constitutions, even an ordinary dose may give rise to unpleasant symptoms; it is therefore necessary to observe caution in prescribing it. A good deal of controversy has taken place with regard to the specific action of Colchicum in gout and rheumatism; but it is now generally admitted on all hands, that, whatever the nature of its action may be, its effects, under judicious management, are highly beneficial. Some attribute the good effects of Colchicum in the above-named diseases to its sedative properties; others to its cathartic, supposing that the irritation which it causes in the mucous membrane of the intestines diminishes the inflammatory action going on in the mucous membrane of the joints, on the principle of counter-irritation. This view receives some confirmation from the fact, that, until purging be produced, little diminution in the symptoms takes place, and from the additional fact, that the combination with a gentle laxative greatly expedites the cure. Colchicum possesses the remarkable property of increasing the quantity of uric acid in the urine. This was first observed by Professor Chelius, who states, that the quantity of uric acid is nearly doubled after the Colchicum has been taken for twelve days.† As an increased discharge of uric acid immediately precedes or accompanies the favourable termination of a gouty paroxysm, and as the concretions found in the joints of gouty persons are composed of uric acid in union with ammonia, it seems to me not an unnatural conclusion, that the property of increasing the discharge of the acid is as likely to be the cause of the good effects of the Colchicum, as either its sedative or cathartic qualities. The *Eau Medicinal d'Husson*, a celebrated empirical preparation, is supposed to be prepared either from the *Colchicum* or the *Veratrum*; and as both these plants owe their medicinal virtues to the same principle, and as they both act as powerfully in the cure of gout as that preparation, it is probable that, if not prepared from either of them, it must be from some other of the same natural family. For the particulars of the chemical history of *Veratria*, see *Veratrum album*. Every part of the meadow saffron is active, but the bulb and seeds are the parts commonly employed in medicine. The seeds are more uniform in their strength, as the bulb, unless gathered at the proper season, is nearly inert. Orfila gave three fresh bulbs, gathered in June, to a dog, without producing any effect;‡ while a much smaller quantity, gathered when the plant is active, has been found to cause death in a few hours.—J. D. M.

* Christison on Poisons, 745. † Richard, Histoire Naturelle Medicale, i. 357. ‡ Orfila, Toxicologie Generale, ii. 257.

Officinal. Radices et Semina.

Officinal preparations. Acetum Colchici, *Lond.* Syrupus, *Edin.* Oxymel, *Dub.* Spiritus Colchici Ammoniatus, *Lond.*

Dosis, *a* ʒss. *ad* ʒiss. Aceti; *a* ʒi. *ad* ʒii. Syrupi, Oxymelis, Vini, et Spiritus Ammoniati; *a* gr. iv. *ad* x. Pulveris.

VERATRUM ALBUM. *White Hellebore.*

Class and Order, POLYGAMIA MONŒCIA. Nat. Ord. MELANTHACEÆ.

GEN. CHAR. Fertile Flower, *Calix* wanting; *Corolla* of six petals; *Stamens* six; *Ovaries* three; *Capsules* three, many-seeded.

Male Flower, same as fertile, but no ovaries.

Veratrum *album;* racemes panicled, bracteas of branches oblong; partial ones as long as the downy peduncles; flowers erect.

V. album, *Lin. Sp. Pl.* 1479. *Woodville, Med. Bot.* ii. p. 273.

A HARDY plant, a native of Italy, Switzerland, Austria, and Russia, was cultivated in Britain by Gerard in 1596, and is now commonly met with in gardens. The root is perennial, thick, with numerous fibres; stems strong, round, upright, hairy, attaining to three or four feet high; leaves numerous, large, oval, entire, plaited, sessile: flowers pale green, in long branched spikes, the perfect and male flowers interspersed. The properties of the species appear identical, and they are all of easy cultivation.—G.

The medicinal properties of the Veratrum are similar to those of the Colchicum. Its activity is greater, and many cases of poisoning with it are recorded. Dr Christison quotes from Rust's Journal the following account: " A family of eight people, in consequence of eating bread for a whole week, in which the powder of the root had been introduced by mistake instead of cummin seeds, were attacked with pains in the belly, a sensation as if the whole intestines were wound up in a clue, swelling of the tongue, soreness of the mouth, and giddiness; but they all recovered by changing the bread and taking gentle laxatives." Dr Christison again quotes from Horn's Archives. " Three people took the root by mistake for Galanga root. The symptoms that ensued were very characteristic of its double action. In an hour they had all burning in the throat, gullet, and stomach, followed by nausea, dysuria, and vomiting; weakness and stiffness of the limbs; giddiness, blindness, and dilated pupil; great faintness; convulsive breathing; and small pulse. One of them, an elderly woman, who took the largest share, had an imperceptible pulse, stertorous breathing, and total insensibility, even to ammonia held under her nose. Next day she continued lethargic, complained of headach, and had an eruption like flea-bites."

According to Pelletier and Caventou, the root of white hellebore contains a peculiar fatty matter, which gives when saponified a peculiar acid analogous to the cevadic; a yellow extract; the supergallate of *Veratria*, gum, starch, and vegetable fibre. The seeds of the *Veratrum sabadilla* are even more active than the white hellebore. They contain, according to Meissner, 0.43 of fatty matter resembling suet; 0.10 of wax; 24.20 of fixed oil; 1.45 of resin soluble in ether; 8.43 of resin insoluble in ether: 0.58 of *Veratria;* 5.97 of extractive mixed with an acid, the nature of which he could not determine; 0.65 of saccharine extract; 4.82 of gum; 1.11 of animalized extract mixed with salts of potass; 1.06 of vegetable mucilage and oxalate of lime; 24.14 of extract obtained by the action of caustic potass; 20.56 of vegetable fibre; 6.40 of water. *Veratria* was discovered at the same time by Pelletier and Caventou, and by Meissner in the *V. album* and *sabadilla*, and in the *Colchicum autumnale;* it is prepared in the same way as the other alkaloids, and has not yet been crystallized; it is, when pure, in the form of a white powder, of an extremely burning and acrid taste, exciting violent and dangerous sneezing when applied to the nostrils; it restores the blue of litmus paper which has been reddened by an acid; it forms salts with the acids; it is nearly insoluble in water and in ether; alcohol readily dissolves it.—J. D. M.

Officinal. Radix.

Officinal preparations. Tinct. Veratri. *Edin.* Vinum, Decoctum, et Unguentum Veratri. *Lond.* Unguentum Hellebori Albi. *Dub.*

Dosis, *a* gr. i. *ad* gr. iii. Radicis; *a* gtt. v. *ad* x. Tincturæ; et *a* gtt. xx. *ad* ʒi. Vini.

ACACIA CATECHU. *Catechu.*

Class and Order, POLYGAMIA MONŒCIA. Nat. Ord. LEGUMINOSÆ.

GEN. CHAR. Hermaphrodite flower: *Calix* five-toothed; *Corolla* of five petals; *Stamens* from four to one-hundred; *Pistil* one; *Legume* of two valves.

Male flower: *Calix* five-toothed; *Corolla* of five petals; *Stamens* four to one-hundred.

Acacia *Catechu;* spines stipulary, hooked, in pairs; leaves bipinnate, primary division of ten pairs, secondary of many pairs, hairy, a gland situated on the petiole, between the two terminal outer leaflets.

A. Catechu, *Willd. Sp. Pl.* v. 4, v. 73.

Mimosa Catechu, *Lin. Suppl.* 409. *Woodville, Med. Bot.* v. ii. p. 183, t. 66.

THIS species forms a low bushy tree, from twelve to twenty feet high. The stem is covered with rough brown bark; leaves placed alternately on the younger branches, com-

posed of from fifteen to thirty pinnæ; the pinnulæ of about forty pairs, the partial pinnæ about two inches long; spines short, recurved, situated in pairs at the base of each leaf; flowers in long dense spikes, arising from the axillæ of the leaves; corolla of one piece, divided into five segments or petals; stamens twice the length of the corolla.

The plants forming the genus Acacia were separated by Willdenow from the genus Mimosa, in which they were placed by Linnæus, and from which they differ in the form of the seed-pods, which in the true Mimosa separate into one-seeded joints, and the flowers are furnished with but eight stamens.

It is an extensive genus, all the species of which are natives of the warmer parts of the old and new continent. Loudon enumerates eighty-two species. In this country they mostly require the protection of a greenhouse, though two or three species thrive and produce their flowers in the open air, against a wall in the Botanic Garden of Edinburgh.—G.

Catechu is one of the most powerful astringents which we possess. It is also safe, and may be used in almost all cases in which astringents are indicated.

"Catechu has the appearance of a dried extract of various forms, rounded masses, or cut into squares or lozenges. It is perfectly opaque, and has always an earthy fracture.

"The Bombay catechu is of an uniform texture, and of a red-brown tint, its specific gravity being generally about 1.39. The extract from Bengal is more friable and less consistent. Its colour is like that of chocolate externally; but when broken its fracture presents streaks of chocolate and of red-brown. Its specific gravity is about 1.28. Their tastes are precisely similar, being astringent, but leaving in the mouth a sensation of sweetness. They do not deliquesce, or apparently change by exposure to the air, and are not fusible.

"In the first edition of this Dispensatory, in 1803, I published, as the results of my analysis of catechu, that it consisted chiefly of tannin and extractive. This has been confirmed by the subsequent examination by Sir H. Davy, who states that it contains about one-half of its weight of tannin, 35. *per cent.* of extractive, 6 to 8 of mucilage, and 5 to 7 of impurities."*

According to Sir H. Davy, Bombay catechu contains

Tannin, - -	109.
Extractive, - -	68.
Mucilage, - -	13.
Insoluble residue, -	10.

Bengal catechu contains

Tannin, - -	97.
Extractive, - -	73.
Mucilage, - -	16.
Insoluble residue, -	14.

From the large quantity of tannin which catechu contains, it has been proposed to use it in the preparation of leather; though the expence of importing, and the price of the drug itself, would prevent its being used in Europe, yet in India there is no doubt that it might

* Duncan's Dispensatory, p. 185.

be successfully employed. The tannin of catechu differs in some of its less important properties from pure tannin.—J. D. M.

Officinal. Extractum, a ligno paratum.

Officinal preparations. Tinctura Acaciæ Catechu. *Lond. Edin. Dub.*

Electuarium Acaciæ Catechu. *Edin. Dub.* Infusum Acaciæ Catechu. *Edin.* Infusum Acaciæ Catechu Compositum. *Lond.*

Dosis, *a* gr. x. *ad* ℈i. Extracti; *a* ℈i *ad* ʒi. Electuarii; *a* ʒi. *ad* ʒii. Tincturæ; *ab* ʒi. *ad* ʒiij. Infusi.

EUPHORBIA OFFICINARUM. *Officinal Spurge.*

Class and Order, MONŒCIA MONANDRIA. Nat. Ord. EUPHORBIACEÆ.

GEN. CHAR. *Involucre* of one petal, including several barren flowers and one fertile.

Sterile flower; a single *Stamen*, without calix or corolla.

Fertile flower; a single *Pistil*, without calix (or rarely a very minute one) or corolla; *Germen* three-lobed; *Styles* three-cleft; *Capsule* three-seeded.

Euphorbia *officinarum;* prickly, with many angles; naked; prickles in pairs.

E. officinarum, *Lin. Sp. Pl.* 647. *Willd. Sp. Pl.* v. 2, 881.

THE structure of the flowers of this genus appears to have been formerly very imperfectly understood, but it has been recently fully investigated, and the details, as given in the generic character, clearly ascertained. In structure there is a considerable affinity with that of *Reseda*, the Mignonette.

All the species of this numerous tribe abound in a milky acrid juice, which corrodes the skin wherever it comes in contact with it. The officinal species is a native of Africa, but thrives in our hot-houses. The stem grows to the height of four or five feet, sometimes branched at the summit, at others simple, with six to eight angles, which, in the younger branches, are caused by deep furrows, which become nearly obsolete as the plant advances in age. Flowers solitary, sparingly produced on the edges of the ridges; yellowish-green; the stem is leafless.

The whole family are possessed of similar properties. Our native ones, though small, are indued with very energetic properties, and are often applied to eat off warts.

This species was introduced in 1597. Loudon enumerates one hundred and thirty-four species.—G.

Dr Duncan describes the mode of collecting the Euphorbium resin thus: "The inhabitants of the lower regions of Atlas make incisions in the branches of the plant with a knife, a corrosive milky juice issues, which after being heated by the sun, becomes a substance of a whitish yellow colour, and in the month of September, drops off and forms *Euphorbium*. The plants produce abundantly only once in four years, but this fourth year's produce is more than all Europe can consume; for, being a very powerful cathartic, it is but lit-


1
4
S. alba.
Sinapis nigra.
1
2
3

tle used. The people who collect Euphorbium are obliged to tie a cloth over their mouth and nostrils, to prevent the small dusty particles from annoying them, as they produce incessant sneezing. The branches are used in tanning morocco leather, and the juice is in great request among the women as a depilatory." * Euphorbium is an acrid and drastic purgative; it is never, or very seldom, used internally. Applied to the skin, it causes increased heat and redness. Dr Christison mentions fatal cases,—one occurred under his own observation in the Royal Infirmary of Edinburgh, and was supposed to have been caused by a mixture containing Euphorbium having been taken, which was intended to cure horses of the grease.† Dr C. says, the symptoms of poisoning with Euphorbium in man are violent griping and purging, with burning heat of the throat and fauces, followed by exhaustion. The appearances after death are, highly inflamed state of the stomach, which is sometimes covered with gangrenous spots. From Orfila's experiments, it seems equally poisonous, whether applied to a wound or given internally; half an ounce of the powder killed a large dog in twenty-six hours when given internally, and two drachms caused death in twenty-seven hours when applied to a wound.‡

According to Braconnot, Euphorbium is thus composed:

Resin, - -	37.0	Woody fibre, -	13.5
Wax, - -	19.0	Water and volatile oil,	5.0
Malate of lime, -	20.5	Loss, - -	3.0
——— of potass,	2.0		

According to Pelletier,

Resin, - -	60.80	Woody fibre and Bassorine,	2.00
Wax, - -	14.40	Water and volatile oil,	8.00
Malate of lime, -	12.20	Loss, - -	0.80 §.
——— of potass,	1.80		

Officinal. Gummi Resina. J. D. M.

Dosis, *a* gr. i. *ad.* gr. ii.

SINAPIS ALBA. *White Mustard.*

Class and Order, TETRADYNAMIA SILIQUOSA. Nat. Ord. CRUCIFERÆ.

GEN. CHAR. *Pod* nearly round, with nerved valves; *Style* small; short, acute; *Seeds* disposed in one series; *Calix* spreading.

Sinapis *alba;* pods hispid, turgid, shorter than the ensiform beak; leaves pinnatifid; seeds yellow.

S. alba. *Lin. Sp. Pl.* 933. *Fl. Brit.* 721. *Engl. Brit.* t. 1677. *Fl. Lond.* ed. 2. v. iii. *Hooker Br. Fl.* p. 309.

THIS common plant is found among rubbish, and in neglected and uncultivated places; its hispid pods and pinnated leaves distinguish it from the following species. It is cultivated

* Duncan's Dispensatory, p. 341.
† Christison on Poisons, 518.
‡ Orfila, Toxicologie Generale, i. 710.
§ Dictionnaire des Drogues.

as a salad, and eaten when the seed leaves only have appeared; its seeds are much larger than those of the black mustard, but less pungent in their taste, though often mixed in the manufacture of flour of mustard. Its properties are similar to those of the other species, but less active.—G.

SINAPIS NIGRA. Black Mustard.

Class and Order, Nat. Ord. and Generic Character, see *S. Alba.*

Sinapis *nigra;* pods appressed, smooth, somewhat tetragonal, lower leaves lyrate, upper ones entire, lanceolate, glabrous; seeds black.

S. nigra. *Lin. Sp. Pl.* 933. *Fl. Brit.* 722. *Engl. Bot.* t. 969. *Woodville, Med. Bot.* iii. p. 400. *Hooker, Br. Fl.* p. 309. *Don, Syst. Gard.* v. i. p. 248.

This species is found under hedges and in waste places, growing from one to three feet high, and is readily distinguished from the preceding species by its seed-vessel and large lower leaves. Black mustard is extensively cultivated for its seed, from which the well-known condiment mustard is procured.—G.

Under the name of "Flour of Mustard," the powder of the seeds is familiar to all. Its uses as a condiment are also well known. The French mustard is much weaker than that used in this country; this arises from the mode of preparation. In France the seeds are merely reduced to powder; in Britain they are first submitted to pressure, by which a quantity of bland fixed oil is expressed, and the cake which remains, is rendered much more pungent. Though the process be so well known in this country, yet in France it was considered necessary to have recourse to M. Robinet, a celebrated chemist, to verify it by experiment.

Mustard possesses tonic, emetic, and rubefacient properties. When prescribed as a tonic, the seeds are directed to be swallowed in their entire state. In dyspepsia, arising from languid action of the stomach, and that torpid state of the intestinal canal which frequently accompanies paralysis, they are often beneficial. The flour of mustard mixed with water has been long used as an emetic by the common people. In that species of asphyxia which is caused by the choke-damp of coal mines, a mustard emetic is the common remedy, and generally succeeds in rousing the person from the torpor in which he is plunged. While cholera asphyxia raged in Sunderland, Dr O. Lindsay of Dublin, Deputy-Inspector of Army Hospitals, tried its effects in that disease with the most complete success.—I attended the first case in which it was given, and the result was so satisfactory, that, in Newcastle and Sunderland, the practice became universal; but though useful in the first stages of the disease, yet in very few cases did any good result from its exhibition after the blue stage had commenced. I had an opportunity of trying it in a very great number of cases, and

would still recommend it in the stage of diarrhœa, but not in the blue stage. Dr Lindsay also gave it in small doses as a diffusible stimulus, and from this mode of treatment I have seen very good effects. As a rubefacient, mustard is extremely valuable; where immediate counter-irritation is requisite, it is much superior to cantharides. In fever, where there is determination to the head, cataplasms of mustard (sinapisms) applied to the soles of the feet, and to the whole of the lower extremities, are often of great use. Care must be taken in the latter stages of fever that the sinapisms are not allowed to remain too long on, as gangrene has been known to supervene.

Henry and Garot announced the discovery of a new acid in mustard, to which they gave the name of the sulpho-sinapic. This acid formed blood red solutions with the salts of iron. From this property, Pelouze was led to examine it, and found that the mustard contained the sulpho-cyanuret of lime. Henry and Garot repeated their experiments, and found neither sulpho-sinapic acid, nor sulpho-cyanic, but they discovered a substance which had the properties which they had ascribed to these acids; to this they gave the name of *sulpho-sinapisine*, which is now altered to *sinapine*.—*Sinapine* is prepared thus: A decoction of the powder of mustard (deprived of its fixed oil) is made, this is boiled down to the consistence of honey, absolute alcohol is now added, by which the gum, the extractive and colouring matters, and various salts are precipitated. The alcoholic solution is then filtered and distilled to the consistence of syrup, this is allowed to evaporate spontaneously, and crystals of *sinapine* are deposited. The crystals are purified by re-solution in, and crystallization from alcohol. If they are not colourless, they are to be washed with ether, which dissolves the colouring matter. *Sinapine* is colourless, bulky, and light, its taste is bitter, resembling that of mustard; it is soluble in alcohol and in water, and does not combine with acids.

According to Charlard, a substance analogous to *Sinapine* is procured from the solution from which it has been deposited; it differs from it in some points, and is composed thus:

Carbon, - - -	54.0003
Hydrogen, - - -	10.6512
Nitrogen, - - -	2.8392
Oxygen, - - -	23.1426
Sulphur, - - -	9.367

According to Henry and Garot, *sinapine* is thus composed:

Carbon, - - -	57.920
Hydrogen, - - -	7.795
Nitrogen, - - -	4.940
Oxygen, - - -	19.688
Sulphur, - - -	9.657

For further information, see Berzelius, Traité de Chimie, vi. 349. Journal de Chimie Medicale, (for February, 1831), p. 84. Journal de Pharmacie, xvii. 290 and 302.—J. D. M.

Officinal. Semina.

Officinal preparation. Cataplasma Sinapis, *Lond. Dub.*

Dosis, *a* ʒii. *ad* ℥ss. Seminum integrorum, pro tonico; *a* ʒii. *ad* ʒiii. Pulveris, pro emetico.

References to Plate 34.

Fig. 1, Calix; Fig. 2, A petal; Fig. 3, Calix and stamens, petals removed.

Plate 35. A ripe seed-pod of *Sinapis alba.*

PUNICA GRANATUM. Pomegranate.

Class and Order, ICOSANDRIA MONOGYNIA. Nat. Ord. MYRTACEÆ.

GEN. CHAR. *Calix* of five segments: *Petals* five; *Berry* many-celled, many-seeded.

Punica *Granatum;* leaves lanceolate, stems arborescent.

P. Granatum, *Willd. Sp. Pl.* ii. 981. *Woodville, Med. Bot.* i. t. 58. *Bot. Mag.* t. 1832.

THE pomegranate, from the earliest times, has been cultivated as a favourite fruit, particularly in the southern parts of Europe, in Arabia, in Persia, and in the Grecian Archipelago; it has been introduced into the East and West Indies, and the fruit produced in these latter countries is said to surpass in flavour that found in its native stations. In this country it rarely rises to more than a shrub, but in its native country is said to form a tree eighteen or twenty feet in height; it produces a profusion of brilliant scarlet flowers, which in Britain is rarely succeeded by fruit; it sometimes varies with white, also with double flowers. "In its wild state it forms a thorny bush like our hawthorn." The fruit is imported into this country from Geneva and Leghorn. Only two species are recorded.—G.

The pulp of the pomegranate is of a subacid sweetish taste, it allays heat, quenches thirst, and acts as a gentle aperient; it is particularly grateful in warm climates. The rind of the fruit is highly astringent, and where the fruit is abundant, this part of it is used in tanning. The flowers are frequently used, both internally and externally, as astringents. Of late the bark of the root has been much spoken of as a remedy in tape-worm.

"This remedy against tænia, known to the ancients, has been recently revived. It had been formerly employed and recommended by Mr P. Breton, according to Dr Chapotin. The following is his mode of exhibiting it. Take two ounces of the dried root of the pomegranate tree, boil them in two pints *(litres)* of water down to twelve ounces. Of this decoction sixty-four grammes (two ounces) to be given every half hour. The worm is often voided twelve hours after the first quantity has been taken. This practice may be repeated for four or five days successively, but must be suspended if the patient feels vertigos, an uneasy state and pains in the intestines. Castor oil is commonly given after the four draughts, even when the worm has been voided.

"It must be observed, that to obtain a constant success from this remedy, we must always use the bark of the root of the wild pomegranate, which grows in Africa, Spain, and in some provinces of the south of France. M. Pichonnier Junior, apothecary at Vimoutier, asserts that the pomegranate cultivated in the gardens of the west of France is equally vermifuge. He has ascertained by repeated experiments that the fresh root is to be preferred.

"According to M. Bourgeoise, this remedy ought never to be administered until the patient has voided portions of tænia.

" M. Mitouart analyzed the bark of the wild pomegranate root. He has found that it contains tannin, a matter analogous to wax, a saccharine substance, of which one part is soluble in alcohol, the other in water; of these the former is crystalline, and the second has the characters of mannite; and lastly gallic acid in very notable proportion.

" The bark of pomegranate is said to be substituted for Jesuits bark in Asiatic medicine. It is the remedy employed by the doctors in Persia for intermittent fevers.—Ch. and R.

" For the introduction of pomegranate bark as a cure for the tape-worm, we are indebted to a Mussulman Fakir of Calcutta, who having in a few hours relieved an English gentleman in 1804, was prevailed on to disclose his secret, which was then communicated by Mr Russell for general information. The first printed notice is by Dr F. Buchanan, now Hamilton. Dr Fleming published some cases in which the decoction was given successfully by Dr Pollock, who also inserted in the tenth volume of the Edinburgh Journal a case in which he ventured to give it to a child, and with perfect success. Mr Breton's two communications on the subject increased our knowledge of its effects, and have already been quoted.

" Dr Gomez of Lisbon also published the results of his trials with this vermifuge; and to the Continental treatises already quoted, we may add a paper by M. Chevallier, observations by Dr Wolff of Bonn, and a case by M. Delaport. The analysis by M. Mitouart gives no explanation of its effects. The active principle has escaped his observation.—(A. D.)"*

Godefroy mentions that the root of the *Berberis vulgaris* is fraudulently substituted, and gives the following process for discovering the imposition: To an infusion of the suspected bark, let acetate of lead be added; if it be that of the pomegranate a precipitate will be thrown down, and the infusion will be deprived of colour; if it be that of the *Berberis*, very little alteration will take place. † According to Reuss, the bark of the pomegranate contains 27.8 of tannin; 0.9 of resin; 21.8 of extractive; 34.2 of gum; 10.2 of residue, containing tannin and traces of gallic acid; loss 5.1. ‡ Dr Duncan supposed that the *Punica* killed the worm by its astringency, and, on the same principle, tried catechu with some prospect of success.—J. D. M.

Officinal. Pomorum Cortex.

Dosis, *a* ℈i. *ad* ʒss. Punici Granati Fructûs corticis.

* Dr Duncan's Supplement to the Edinburgh Dispensatory, pp. 83, 84.

† Richard, Histoire Nat. Medicale, ii. 412.

‡ Berzelius, Traité de Chimie, vi. 345.

TUSSILAGO FARFARA. Coltsfoot.

Class and Order, SYNGENESIA SUPERFLUA. Nat. Ord. COMPOSITÆ.

GEN. CHAR. *Involucre* formed of a single row of equal, linear scales; *Receptacle* naked; *Flowers* radiant; *Corollas* of the circumference long, linear, numerous, of the disk few; *Pappus* simple.

Tussilago *Farfara;* scape single-flowered, imbricated with scales, leaves cordate, angular, toothed, downy beneath.

T. Farfara, *Lin. Sp. Pl.* 1214. *Fl. Brit.* 878. *Engl. Bot.* t. 429. *Fl. Lond.* ed. 2, iii. *Hooker, Br. Fl.* p. 359.

COLTSFOOT is a common perennial plant, abounding in moist situations, and producing its blossoms among the earliest of our native flowers; in mild seasons often as early as the end of February. Roots strongly creeping; flowers appearing before the leaves, at first erect, but after flowering, drooping; leaves large, deep-green, beneath thickly coated with a dense tomentum; these begin to appear as the flowers decay.

The leaves of this plant enter into the composition called Herb Tobacco, and in some parts of Britain the leaf-stalks are candied, and used to alleviate coughs and asthmatic affections.—G.

Coltsfoot is recommended in phthisis and other pulmonary complaints, and in scrofula; but the benefit which is said to accrue from its use ought to be attributed rather to the milk diet, with which it is generally prescribed, than to any inherent virtue. The flowers and leaves are both employed; the former have rather an agreeable odour and a weak bitter taste; the latter have a more bitter taste, and are highly spoken of by some authors as remedies in scrofula. Several quack medicines are prepared from this plant, and are extensively used in phthisis, asthma, and other affections.—J. D. M.

Officinal. Flores et Folia.

ULMUS CAMPESTRIS. *Common small-leaved Elm.*

Class and Order, PENTANDRIA DIGYNIA. Nat. Ord. ULMACEÆ.

GEN. CHAR. *Perianth* single, superior, persistent, four or five-cleft; *Capsule* compressed, winged all round, one-seeded.

Ulmus *campestris;* leaves rhomboid-ovate, acuminate, wedge-shaped and oblique at the base, always scabrous above, doubly and irregularly serrated, downy beneath, serratures incurved; branches wiry, slightly corky, when young bright brown, pubescent; fruit oblong, deeply cloven, naked.—*Hooker.*

U. campestris. *Lin. Sp. Pl.* 327. *Fl. Brit.* 281. *Woodville, Med. Bot.* t. 242. *Engl. Bot.* 1886. *Hooker, Br. Fl.* p. 140.

THIS well known tree grows to a large size, with rugged bark, and small leaves, the flowers grow in dense clusters: its value as a timber tree is great, as it is not subject to decay from excessive moisture. Before the introduction of iron pipes for the supplying of London and other large towns with water, elm ones were in general use for that purpose.—G.

The medicinal virtues of the elm are so slight, that it might be expunged from the Materia Medica with great propriety. Decoctions of the inner bark have been occasionally recommended in dropsy and in ichthyosis. Klaproth discovered a peculiar principle in the elm, to which he gave the name of *Ulmine;* it exists in many other trees and vegetables; it is solid, tasteless, inodorous, of a shining black colour; it is insoluble in cold water, and sparingly soluble in boiling, to which it imparts a yellow colour. It is soluble in alcohol and in sulphuric acid, it reddens litmus paper, and is very soluble in the alkalies.

Vauquelin, Berzelius, and other chemists have examined *Ulmine.* For farther information, see Berzelius, Traité de Chimie, vi. 237 to 240.—J. D. M.

Officinal. Cortex Tenuior.

Officinal Preparations. Decoctum Ulmi, *Lond. Edin. Dub.*

Dosis, *a* ʒss. *ad* ʒiss. Corticis; *ab* ℥iv. *ad* ℥viii. Decocti.

RHAMNUS CATHARTICUS. Common Buckthorn.

Class and Order, PENTANDRIA MONOGYNIA. Nat. Ord. RHAMNEÆ.

GEN. CHAR. *Calix* campanulate, four or five-cleft; *Petals* four or five, or wanting; *Stamens* opposite the petals; *Berry* two or four-celled, two or four-seeded.

Rhamnus *catharticus;* spines terminal; flowers four-cleft; dicœcious; leaves ovate, sharply serrated.

R. catharticus. *Lin. Sp. Pl.* 279. *Fl. Brit.* 260. *Woodville, Med. Bot.* v. ii. t. 114. *Engl. Bot.* 1629. *Hooker, Br. Fl.* p. 104.

A low spreading shrub, not unfrequently met with in England, in hedges and low woods; "leaves with four or six strong lateral nerves parallel with the margin or rib." In the perfect flowers the calix is urceolate. The berries in the unripe state yield a yellow dye, and in this state are known by the name of French berries; when ripe the juice is purple. The bark yields a beautiful yellow dye; its purgative properties are said to be communicated to the flesh of such birds as feed on its berries. The other native species, *R. Frangula*, is also cathartic, and has dark purple berries, containing only two seeds, which before they are ripe, dye wool green and yellow, when ripe blue, blue-grey, and green. The wood, prepared as charcoal, is used by the makers of gunpowder. Twenty-four species are described.—G.

The fruit of the *Rhamnus catharticus* was at one time a good deal used as a purgative; but, from the violence of its operation, and the disagreeable symptoms to which it gave rise, it has of late fallen into disuse. On the Continent it is still prescribed, chiefly in the form of syrup. When combined with lime and alumina, the juice of the berries forms the well-known pigment "sap-green." The inner bark is said to possess all the active properties of the fruit, and to be more apt to cause vomiting.*

According to an analysis published by M. Hubert in the *Journal de Chimie Medicale* for April 1830, the berries contain acetic and malic acids; a green colouring matter, which becomes red as the fruit ripens, from the acids which are then formed; another colouring matter, of a brownish colour, insoluble in alcohol, soluble in water and in the weak acids and alkalies, of a gummy nature, and disappearing entirely during fermentation; lastly, sugar. —J. D. M.

Officinal. Baccæ.

Officinal preparation. Syrupus Rhamni. *Lond.*

Dosis, *a* xv. *ad* xx. Baccarum; *a* ℥ss. *ad* ℥i. Syrupi.

* Richard, Hist. Nat. Med. ii. 566.

SAMBUCUS NIGRA. *Common Elder.*

Class and Order, PENTANDRIA TRIGYNIA. Nat. Ord. CAPRIFOLIACEÆ.

GEN. CHAR. *Calix* five-cleft; *Corolla* rotate, five-lobed; *Berry* inferior, three or four-seeded.

Sambucus *nigra ;* cymes with five principal branches; leaflets ovate; stem arborescent.

S. nigra, *Lin. Sp. Pl.* 385. *Fl. Brit.* 336. *Woodville, Med. Bot.* v. i. t. 78. *Engl. Bot.* t. 476. *Hooker, Br. Fl.* p. 143.

A common plant in coppices and hedgerows, forming a low tree. Its branches contain an unusual quantity of pith. The wood is hard, and was used for manufacturing musical instruments. Its rich purple berries are in much request in many parts of England for making into wine, but are in Ireland and Scotland held in disrepute. In Scotland, the elder is called *Boutrey* or *Bon-trey.* It varies with green berries, also in having deeply cut leaves. The last variety is called the parsley-leaved elder, and has been considered as a distinct species by several authors.—G.

The flowers, leaves, and fruit of the elder are occasionally given internally. The flowers are most frequently used; they are considered stimulant, diaphoretic, and deobstruent. The inner bark of the young branches is sometimes prescribed as a purgative. The young leaf-buds are also cathartic, but their action is so violent as to render them unsafe as remedies. A syrup, prepared from the fruit, is in vogue in France as a gentle aperient and sudorific. Wine, having some resemblance to Frontignac, is prepared from the flowers, and is often sold under that appellation. The fruit, when taken in large quantity, is apt to cause nausea and vomiting; and in some constitutions a very small quantity acts as a pretty smart emetic. By distillation the flowers yield a volatile oil of the consistence of butter, having their flavour and other properties. The distilled water contains a perceptible quantity of ammonia.*—J. D. M.

Officinal. Flores, Baccæ, et Cortex interior.

Officinal preparation. Succus spissatus Baccarum.

Dosis, *a* ℥ss. *ad* ℥i. Succi Spissati.

* Berzelius, Traité de Chimie, v. 407.

TORMENTILLA OFFICINALIS. *Common Tormentil.*

Class and Order, ICOSANDRIA POLYGYNIA. Nat. Ord. ROSACEÆ.

GEN. CHAR. *Calix* of eight segments, alternately smaller; *Petals* four.

Tormentilla *officinalis;* leaves in threes, sessile; stem ascending, dichotomous.

T. officinalis; *Lin. Sp. Pl.* 716. *Fl. Brit.* 552. *Woodville, Med. Bot.* t. 9. *Engl. Bot.* t. 863. *Fl. Lond.* ed. 2, iii. *Hooker, Br. Fl.* p. 253.

T. erecta; *Loudon, Encycl. of Plants*, p. 454.

ROOT perennial, large, woody, exterior of a dark-brown, within of a bright-red, becoming more intense when growing in a dry soil; stems numerous, at first procumbent, then erect, branching upward, usually dichotomous; flowers of four petals, but often varying with five, even on the same stem. When it possesses five petals, it usually has ten segments to the calix, which are the essential characters by which the genus *Potentilla* is distinguished from this. By some authors the two genera are united, from the circumstance of the petals and calix not being constant in the number of their parts in either genus. It is to be regretted that the genera are still kept separate.

The tormentil is common to most parts of the kingdom, usually abounding on moors, commons, and open woods; in the latter particularly, if shady, it is apt to become quite erect.—G.

Tormentil root is one of the most powerful of the vegetable astringents. Dr Thomson says that it is only surpassed by catechu and nut-galls.* Its taste is austere and somewhat aromatic, and it is one of the pleasantest of the native medicines of this class. As an external application, it has been recommended for the removal of warts. In leucorrhœa and in gonorrhœa, I have seen very good effects result from the use of the decoction as an injection. Internally, it is useful in chronic diarrhœas, and in all cases where astringents are indicated. According to Meissner, tormentil contains 0.712 of wax; traces of volatile oil; 5.425 of resin; 17.4 of tannin; 18.05 of red colouring matter; 2.575 of a different colouring matter; 4.35 of extractive analogous to gum, and containing a salt of lime; 28.2 of gum; 7.7 of extractive dissolved by means of potass; 15.0 of woody fibre; 6.45 of water.† To these constituents may be added gallic acid. The above analysis by Meissner seems rather confused and complicated.—J. D. M.

Officinal. Radix.

Dosis, *a* ℈i. *ad* ℈ii. Radicis.

* Thomson's El. Mat. Med. and Therapeutics, ii. 23. † Berzelius, Traité de Chimie, vi. 216.

PRUNUS DOMESTICA. *Wild Plum-Tree.*

Class and Order, ICOSANDRIA MONOGYNIA. Nat. Ord. ROSACEÆ.

GEN. CHAR. *Calix* inferior, of five leaves; *Petals* five; *Fruit*, a drupe containing a hard smooth nut.

Prunus *domestica;* peduncles one or two together, leaves ovate lanceolate, beneath downy, branches without spines.

P. domestica, *Lin. Sp. Pl.* 630. *Fl. Brit.* 527. *Woodville, Med. Bot.* t. 85. *Engl. Bot.* t. 1783. *Hooker, Br. Fl.* p. 220.

THIS species or variety of plum is occasionally found in our woods and hedge-rows, and is esteemed by many botanists, together with *P. spinosa*, as a variety of *P. institutia;* whether it is a species or not, it appears permanent. This, as well as the bullace, *P. institutia*, is much less abundant than the sloe, *P. spinosa*.—G.

The fruit of the *Prunus domestica* is sweet and sub-acid; it is not considered a very safe fruit when fresh, as, when taken in quantity, it frequently gives rise to cholic, diarrhœa, and other unpleasant symptoms. When dried they are called prunes. Though the fruit ripens easily, and grows both in England and Scotland, yet, as far as I am aware, no attempt was ever made to prepare prunes in either. The best are imported from France. In febrile and inflammatory diseases they are often given, as, in addition to their nutrient and demulcent properties, they act on the bowels as a gentle laxative. Intestinal concretions have been frequently found to have a prune stone for their nucleus.—J. D. M.

Officinal. Fructus exsiccatus.

PINUS SYLVESTRIS. *Scotch Fir.*

Class and Order, MONŒCIA MONADELPHIA. Nat. Ord. CONIFERÆ.

GEN CHAR. Barren flowers in crowded, racemose catkins; the scales peltate, bearing two one-celled, sessile anthers; *Perianth* none. *Fertile* flowers in an ovate catkin; its scales closely imbricated, two-flowered, perianth none; *Pericarp* one-seeded, terminated by a long, winged appendage, and covered with the imbricated scales, forming a cone or strobilus.

Pinus *sylvestris;* leaves in pairs, rigid; cones conico-ovate, acute, young ones stalked, recurved, as long as the leaves, generally in pairs; crest of the anthers very small.

P. sylvestris. *Lin. Sp. Pl.* 1418. *Fl. Brit.* 1031. *Eng. Bot.* t. 2460. *Woodville, Med. Bot.* iii. p. 570. *Lambert, Pin.* i. t. i. *Hooker, Br. Fl.* p. 411.

This, which is the only species of fir indigenous to the British islands, is found in abundance in the mountainous districts of Scotland, as well as in the northern parts of the continent of Europe; the trees growing on poor soil in elevated situations produce the most valuable timber; it grows to a vast size; Dr Hooker mentions having been shown a plank from the largest tree cut down in the Duke of Gordon's forests of Glenmore, that measured five and a-half feet in diameter. It is a valuable tree for its timber, as well as for the pitch, tar, and turpentine extracted from it; when planted in large masses it forms a noble object, but growing singly is unsightly, and often becomes stunted and deformed. The Highlands of Scotland have extensive natural forests of this species, and in such situations it is not only an object of much grandeur, but likewise of great utility.—G.

PINUS ABIES. *Norway Spruce Fir.*

Class and Order, Nat. Ord. and Gen. Char. See *Pinus sylvestris.*

Pinus *abies;* leaves solitary, quadrangular; cones cylindrical; scales rhomboid, flattened, undulated, margins notched.

P. abies. *Lin. Sp. Pl.* 1421. *Woodville, Med. Bot.* iii. p. 573. *Lambert's Genus Pinus,* p. 37, t. 35.

The Norway Spruce Fir is one of the most valuable of the European forest trees, and frequently attains the height of one hundred and fifty feet or upwards; it is a native of the mountainous parts of Europe, and abounds in the northern provinces; it is of common occurrence in our plantations, and British grown timber is held in considerable estimation; but by far the greater part of that used for mechanical and domestic purposes is imported from the north of Europe. Though it grows readily in Britain, it never attains the size of those of Norway and Sweden; but it is by no means a small tree; it is highly ornamental, which, combined with its economic and pharmaceutic properties, renders it well deserving the attention of the forest planter.—G.

PINUS BALSAMIFERA. *Balm of Gilead Fir.*

Class and Order, Nat. Ord. and GEN. CHAR. See *Pinus sylvestris.*

Pinus *balsamifera ;* leaves solitary, plane, partially two-ranked; Cones cylindrical, erect; scales short, pointed.

P. Balsamea. *Lin. Sp. Pl.* 1421. *Lambert, Pin.* p. 48. t. 31.
A. balsamifera. *Mich. Arb. For.* i. p. 145. t. 14.

THIS is a very elegant species, and in its native forests attains a great height. It abounds in the colder parts of North America, in lofty and exposed situations. The climate of Britain does not appear congenial to it, as it rarely forms a large tree, and seldom survives more than twenty or thirty years. It has a considerable resemblance to the silver fir, but its leaves are shorter, broader, and not so pointed. When its cones are at maturity, they exude considerable quantities of a resinous transparent fragrant fluid, as do the stems when wounded. This resin is the Canada balsam of the shops, and is often sold under the name of Balm of Gilead.—G.

The following conspectus of the pine tribe by MM. Morington, Duponchel and Bonastre, is so comprehensive and useful, that I shall quote it at full length from Duncan's Dispensatory.—J. D. M.

"SECTION I.—*Pines.*

" *Pinus maritima*—Sea pine—Pine of Landes—Sea-coasts of the south of Europe. Product: Turpentine of Bourdeaux; contains much volatile oil; employed much in the navy and in the arts; little esteemed in pharmacy.

" *Pinus sylvestris*—Scotch fir—North of Europe. Product: Tenacious thick resin, containing little oil; yields excellent tar, pitch, and *brais gras* for the navy.

" *Pinus rigida*—Rigid pine—Coast of Canada, very cold climate. Product: Resinous juice, said to be black; resin like the preceding.

" *Pinus australis* or *palustris*—Mississippi pine—Sea-coast of Carolina and Florida. Product: Boston turpentine; yields one-sixth of good oil; false elemi, resin for making soap, and the best tar for cordage.

" *Pinus Strobus*—Weymouth pine—Virginia. Product: American turpentine; more fluid than the others, and yields more oil; is mixed with Boston turpentine.

" *Pinus Cembra*—Siberian stone pine—European Alps. Product: A very fluid turpentine; its branches macerated in water, and distilled, yield the Carpathian balsam.

" Section II.—*Firs.*

" *Abies taxifolia*—Silver fir—European Alps. Product: Strasburgh turpentine; yields two resins, the one, deposited in blisters, remains clear and fragrant; the other, furnished by incision, gets turbid, and resembles pitch.

" *Abies Balsamea*—Balm of Gilead—North America. Product: Spurious balsam of Gilead; deposited in blisters, preserves its limpidity, smell and strength. Balsam of Canada obtained by incision is less fragrant, less clear, and thicker.

" *False Firs.*

" *Abies picea*—North of Europe and Asia. Product: White pitch; a thick resin, at first clear, then turbid and soon hardens; very little oil.

" *Abies Canadensis*—Hemlock spruce—North of America. Product, considered resinous, of which is made the North American pitch, which is tar boiled down to one-half.

" *Abies nigra*—Black spruce—North of America. Product: Black essence; constitutes more than two-thirds of the tar of Ohio, Lake Champlain, as far as Newfoundland.

" *Abies orientalis*—Levant spruce. Product: Spruce tears; resin exuding naturally from the extremities of the branches, remains clear.

" *Larches.*

" *Larix Europæa*—Common larch—European Alps. Product: Venice and Briançon turpentine; occurs rather towards the centre of the tree, and sometimes in small reservoirs; the most employed in pharmacy; yields also Briançon manna; and also manna of Oremburgh, according to Pallas.

" *Larix Cedrus*—Cedar of Lebanon—Syria, Caucasus. Product: Cedar resin; yields also a saccharine substance, the cedar honey of the ancients, analogous to a Briançon manna; young seeds filled with a resinous acrid juice.

" *Pinus Dammara*—Oval-leaved larch—Mountains of Amboyna. Product: White dammar; its oil evaporates very quickly, and there results a resin as hard as stone.

" *Dombeya excelsa*—Aracauria imbricata—Norfolk island pine. Product: Glutinous turpentine, of a milky whiteness; the body of the tree, according to some, contains none.

" *Thuya articulata*—North of Africa. Product: Sandarac, a dry resin; flows by incision, or, according to Desfontaines, naturally." *

Dr Duncan's own remarks are valuable and well worthy of attention.

" All the tribe abound in every part with resinous juice, which possesses the same general qualities, but presents some varieties, according to the nature of the species and mode of preparation.

" We may arrange the products,

" 1. Into those which exude spontaneously;

" 2. Into those procured by wounding the tree;

" 3. Into those procured by decoction; and,

" 4. Into those which are procured by the action of fire.

* Duncan's Dispensatory, pp. 430–431.

" *By exudation.*

" The *Pinus larix* exudes a species of manna, called Briançon, or, Oremburgh manna, which is not used; as, besides the saccharine matter, it evidently contains turpentine.

" From the *Pinus abies*, and also from the *Pinus sylvestris*, in warm seasons and climates, a resinous juice exudes spontaneously, which hardens into tears by exposure to the air. It is the common frankincense, or *Thus* of the former editions of the London Pharmacopœia, but no longer officinal. It is a solid brittle resin, brought to us in tears, or masses, of a brownish or yellowish colour on the outside; internally whitish, or variegated with whitish specks, of a bitterish, acrid, not agreeable taste, with little smell.

" Real Burgundy pitch is collected, according to Tingry, from the *Pinus picea*, or spruce fir-tree. The resinous juice which exudes from this species is less fluid and less transparent than the proper turpentines. It is collected by the peasants, strained through cloths and put into barrels. If its consistence be too thick, it is mixed over the fire with a little turpentine and oil of turpentine.

" *By incision.*

" To obtain the products of the second kind, a series of wounds is made through the bark into the wood, beginning at the bottom, and rising gradually upwards, until a stripe of the bark, about nine feet high, be removed, which is commonly effected in about four years. The same operation is repeated on the opposite side. The operation is then recommenced close to the edge of the former wound, which by this time is nearly closed. A tree worked in this manner will survive, and furnish turpentine for near a century. The juice, or turpentine, which flows from these wounds, during summer, is collected in a small cavity formed in the earth, at the bottom of the incisions, from which it is occasionally removed into proper reservoirs previous to its purification.

" As the trees exude very little juice during cold weather, no new incisions are made in winter; but the old ones get covered with a soft resinous crust (called *barras*, when it is impure, and mixed with bits of bark, dust, and sand; *gallipot*, when collected with more care; or *white incense*, when it is allowed to remain so long exposed that it becomes resinified,) which is scraped off, and also collected for subsequent purification. All these products are purified by liquefaction and filtration. They consist almost entirely of essential oil and a resin, and differ only in the proportions, the turpentine containing the largest proportion of oil, and the gallipot of resins. Although gallipot contains volatile oil, the quantity is so small, that it is never subjected to distillation, but is purified by melting it with a very gentle fire, and filtrating it. By this process it still contains volatile oil, and is often sold by the name of Burgundy pitch. If boiling water be added to it after it is strained, but while it is still fluid, and they be agitated together till the mass cools, we have a yellow resin, which, from still containing some essential oil, is preferred to that prepared by a similar process from the residuum of the distillation of turpentine. A mere mixture of gallipot and barras, made without heat, is often sold under the name of Burgundy pitch; but the mass resulting from this combination soon becomes friable. It has not the unctuosity, viscidity, tenacity, and smell which distinguish the real kind.

" *Turpentines.*

" Turpentines, or fluid resinous juices obtained by incision, have different appellations, chiefly according to the country from which they are procured.

" Balsam of Canada, from the *Pinus balsamea* and *Pinus Canadensis.*

" Resina pini balsameæ. *Ed.*

" Terebinthina canadensis. *Lond.*

" Balsamum canadense. *Dub.*

" Cyprian turpentine, from the *Pistacia terebinthus.*

" Terebinthina chia. *Lond.*

" Strasburgh turpentine, from the *Pinus picea.*

" Venice turpentine, from the *Pinus larix.*

" Terebinthina veneta. *Ed. Dub.*

" Common turpentine, from the *Pinus sylvestris.*

" Terebintiiina vulgaris. *Lond. Dub. Ed.*

" Hungarian balsam, from the *Pinus sylvestris*, var. *Mughos.*

" Carpathian balsam, from the *Pinus Cembra.*

" None of these are properly balsams; which term is now confined by chemists to those resinous substances which contain benzoic acid. The London College have done well in retaining turpentine as a proper generic name for these oleo-resinous juices.

" All these species of turpentine possess the same general properties. They are more or less fluid, with different degrees of transparency; of a whitish or yellowish colour; a penetrating smell, and a warm pungent, bitterish taste. They are entirely soluble in alcohol, combine with fixed oil, and impart their flavour to water, but are not soluble in it. They are decomposed by a moderate heat, being separated into an essential oil and a resin, and are exceedingly inflammable, burning with a large white flame, and much smoke.

" Each species has some peculiarities. The Canadian is reckoned the best, and next to it the Chian. They are more transparent, and have a more agreeable flavour than the other kinds. The common turpentine, as being the most offensive, is rarely given internally; its principal use is in plasters and ointments among farriers, and for the distillation of the essential oil."*

" *Resins.*

" The residuum of the distillation gets different names, according to some peculiarities in its treatment. When the distillation is performed without addition, and continued until the whole essential oil be driven off, and there appear some traces of empyreuma, the residuum is Fiddler's rosin, or Colophony; but if, while the mass is still fluid, a quantity of water be added, and thoroughly blended with the resin by long and constant agitation, it is then called Yellow rosin.

" The under part of the cake of the residuum of the distillation resembles fiddler's rosin, the action of the fire having entirely expelled the water and volatile oil, and rendered it slightly empyreumatic and transparent, while the upper part, from retaining some water, is opaque and yellow.

* Duncan's Dispensatory, pp. 431–433.

" *By decoction.*

" A fluid extract, prepared by decoction from the twigs of the *Pinus sylvestris*, is the well-known Essence of Spruce, which, fermented with molasses, or sugar and water, forms the fashionable and wholesome beverage of spruce beer.

" *By fire.*

" The last kind of products from the different species of fir is obtained by the action of fire. With this view, a conical cavity is dug out in the earth, communicating at the bottom with a reservoir. Billets of wood are then placed, so as not only to fill the cavity, but to form a conical pile over it, which is covered with turf, and kindled at the top. The admission of air is so regulated, that it burns from above downwards, with a slow and smothered combustion. The wood itself is reduced to charcoal, and the smoke and vapours formed are obliged to descend into the excavation in the ground, where they are condensed, and pass along with the matters liquefied into the receiver. This mixture is denominated Tar, PIX LIQUIDA. *Ed. Lond. Dub.* By long boiling, tar is deprived of its volatile ingredients, and converted into Pitch, PIX NIGRA. *Lond.*

" Tar is a mixture of resin, empyreumatic oil, charcoal, and acetic acid. Its colour is derived from the charcoal; and the other properties in which it differs from a common resin depend on the presence of acetic acid and empyreumatic oil.—The acid itself is not only soluble in water, but also renders the empyreumatic oil more soluble."*

According to Unverdorben, common turpentine, or that obtained from the *P. abies* and *sylvestris*, is composed of volatile oil and two resins, to which latter he has given the names of Pinic, and Sylvic acids, but which Berzelius distinguishes from each other by calling the one " Resin alpha," and the other " Resin bêta." The relative quantity of these two resins varies in different portions of turpentine obtained from the same tree. The quantity of volatile oil varies from 5 to 25 per cent. of the weight of the turpentine employed. Unverdorben separates the resins from each other thus: He first distils the turpentine with water to separate the essential oil. He then dries the residuum, and reduces it to powder. He then exhausts the powder with alcohol (sp. gr. 863,) which dissolves the pinic acid (resin α.) and leaves the sylvic acid (resin β,) the alcohol at the same time takes up another resin, which Berzelius designates " Resin gamma." An alcoholic solution of the acetate of copper is now to be added as long as any precipitate is formed. The precipitate is a compound of resin α with copper, or a *pinate* of copper. The resin γ remains in solution, and can be obtained by evaporation. To obtain resin α in a state of purity, the pinate of copper is to be dissolved in alcohol; hydrochloric acid is to be added as long as any precipitate falls; the precipitate is to be separated by filtration, and is to be repeatedly boiled in water, and then dried. It is pinic acid in a state of purity. Resin γ remains in solution, and can be obtained by evaporating the filtered liquid. When first precipitated, the resin contains alcohol, which renders it soft, but this is expelled by the boiling with water. When the resin is thus purified, it is colourless, if the turpentine from which it is prepared have not been previously deprived of its essential oil; but if it have been deprived of its essential oil, it then assumes the dark colour of the resin, which is known as " *colophony*," or " *fiddler's rosin.*" It is so-

* Duncan's Dispensatory, pp. 434–435.

luble in every proportion in ether, alcohol, the oils of turpentine and petroleum, and its solutions redden litmus. The resin in powder, even when it contains water in combination, does not produce this effect.

The salts which this resin or acid forms with the alkalies are prepared by mixing an ethereal solution of the resin with the carbonate of the alkali; the carbonic acid is evolved, and the salt remains in solution, and can be obtained by evaporating the ether. The carbonate of magnesia is the only earthy salt which is thus decomposed. Unverdorben gives the characters of a great many salts formed by the union of this resin with the alkalies, alkaline earths, and metallic oxides. *

Resin β, or sylvic acid, is obtained from that portion of the dried turpentine which is insoluble in the alcohol, (sp. gr. 863.) This residuum consists of resin β mixed with a little of resin α. It is to be dissolved in two parts of boiling alcohol, (sp. gr. 863;) the alcoholic solution is to be filtered while hot; as it cools, crystals of the resin are deposited. These contain 4 per cent. of resin α, which can be separated by dissolving the crystals in absolute alcohol, to which one-tenth part of strong sulphuric acid has been added. In about an hour after the solution is formed, the resin is deposited in beautiful large crystals, which are to be washed with a little cold alcohol (sp. gr. 863), to free them from the acid mother liquid.

The crystals are colourless four-sided rhombic prisms. They combine with the alkalies, earths and metals, nearly in the same way as resin α. The principal difference between them is, that the combinations of β are more soluble in ether and anhydrous alcohol, than those of α. Berzelius gives the particular characters of each of the salts, and enters fully into the varieties of resin which are procured from the various species of pine and allied genera.†

Oil of turpentine is procured from many varieties of pine resin by distillation. That which occurs in commerce usually contains a small portion of resin; to free it from which it ought to be distilled with water. When pure it is limpid and colourless. Its odour is in all states disagreeable.

According to Houton-Labillardière it does not contain oxygen; but Opperman, who has more recently examined it, gives the following analysis:

Carbon,	-	84.5923
Hydrogen,	-	11.7349
Oxygen,	-	1.6722

Or in atomic numbers,

Carbon,	-	30.
Hydrogen,	-	51.
Oxygen,	-	1.‡

Alcohol, (sp. gr. 803,) according to Duncan, dissolves five parts of oil, (sp. gr. 865.) Oil of turpentine combines with chlorine and with iodine. With the former the action is, under certain circumstances, so violent that the turpentine is inflamed. By far the most remarkable of the combinations of the oil are those with hydrochloric acid. Thenard found that when the oil was kept cold by a mixture of snow and salt, 100 parts absorbed 33 of acid, and

* Berzelius, Traité de Chimie, v. 468 to 472. † Ibid. p. 440 to 545. ‡ Ibid. p. 390.

yielded 20 of a fuming colourless liquid, and 110 of a solid crystalline matter, to which the name of "artificial camphor" has been given. The fluid compound, when exposed to the air, soon loses the property of fuming; when distilled with the hydrate of lime it yields an aromatic, colourless, oily-looking fluid, soluble in alcohol and ether. The solid compound, when purified by sublimation or by precipitation from an alcoholic solution by the addition of water, is white, translucent, slightly flexible, and tenacious, having an odour between that of camphor and of turpentine, and a strong aromatic, camphorous taste. It is nearly insoluble in water; alcohol, sp. gr. 803, dissolves about one-third part of its weight at the ordinary temperature of the air, and if a saturated solution be made by means of heat, the excess is deposited in a crystalline form on cooling.

Its composition is, according to Houton-Labillardière,

Carbon, - -	76.39
Hydrogen, -	9.63
Hydrochloric acid,	14.08

According to Oppermann,

Carbon, - -	72.8072
Hydrogen, -	8.9802
Hydrochloric acid,	18.2126

The composition of the camphor obtained from the *Laurus camphora* is as follows:

According to Saussure,

Carbon, -	74.38
Hydrogen, -	10.67
Oxygen, -	14.61
Nitrogen, -	0.34

According to Gobel,

Carbon, -	74.67
Hydrogen,	11.24
Oxygen, -	14.09

According to Liebig,

Carbon, -	81.763
Hydrogen,	9.702
Oxygen, -	8.535

The turpentines are stimulant, diuretic, and cathartic. They are seldom given internally, but are occasionally prescribed in gleets, *fluor albus*, and in some varieties of asthma. The balsam of copaiba, which in its chemical constitution resembles the turpentines, has now superseded the real turpentines, that is to say, the produce of the pines, in all affections of the urinary organs.

The oil of turpentine is a medicine of a highly stimulating nature; in small doses it acts as a powerful diuretic, frequently causing strangury, with bloody urine. In large doses it acts as a violent purgative, and has been long used as a vermifuge. Dr Fenwick of Durham proposed its use in tape-worm, and it has been employed with the utmost success in that affection. Large doses seldom cause either strangury or hæmaturia. In combination with *Ol. Ricini*, it is one of the most efficacious purga-

tives with which we are acquainted. In cases of torpid action of the bowels, and in the latter stages of fever, where the powers of life are at a low ebb, enemata containing oil of turpentine are valuable stimuli. Dr Duncan says, that " in obstinate constipation it stands without a rival. In enteritis, peritonitis, colic, and certain inflammatory and spasmodic affections of the abdominal viscera, it acts almost as a specific. It is also efficacious in checking the hæmorrhage in dysentery; and Dr Magee has used it with success in *hæmorrhœa petechialis*. Some habits cannot bear oil of turpentine. I have seen large doses produce temporary intoxication, and sometimes a kind of trance, lasting twenty-four hours, without, however, any subsequent bad effect. The largest dose I have known to have been given has been three ounces, and without injury." The oil of turpentine, whether taken internally or applied to the skin, communicates to the urine the smell of violets. Externally, it acts as a rubefacient, and produces excellent effects in chronic rheumatism, in indolent swellings, in paralysis of the extremities, and in spasmodic affections. It has also been applied to burns. Mixed with boiling water in equal proportions, and applied to the stomach and abdomen as hot as the patient can bear it, it frequently succeeds in putting a stop to the most obstinate vomiting. Applied in the same way to the extremities, it acts more rapidly, and in some cases more beneficially than sinapisms would do. To sloughing ulcers, and in gangrene, whether arising from frost-bite or from old age, turpentine dressings are most useful. Of the other products of the pine tribe, tar and pitch are both used in medicine. Tar water and the vapour of boiling tar have been recommended in phthisis, and pitch has been prescribed with the best results in ichthyosis.—See Dr Bateman on Cutaneous Diseases, and Dr Elliotson's Lectures on Clinical Medicine.—J. D. M.

Officinal. Succus Resinosus ex variis Pinis.

Officinal preparations.* Oleum Terebinthinæ Volatile, *Lond. Edin. Dub.* Resina Flava et Alba, (*i. e.* Resina Oleo Volatile privata,) *Lond. Edin. Dub.* Pix Burgundica vel Pix Abietina preparata, *Lond. Edin. Dub.* Pix Liquida vel Resina Liquida preparata vel Empyreumatica, *Lond. Edin. Dub.* Pix Nigra vel Resina Solida preparata vel Empyreumatica, *Lond. Edin. Dub.* Unguentum et Ceratum Resinosum, *Lond. Edin. Dub.* Emplastrum Ceræ, *Lond.* Emplastrum Simplex, *Edin.* Unguentum Picis Liquidæ, *Lond. Edin. Dub.* Unguentum Picis Nigri, *Lond.* Emplastrum Picis Compositum, *Edin.*

Dosis, *a* ℈i. *ad* ʒi. Terebinthinæ Communis pro Diuretico; *a* gtt. x. *ad* ʒss. Olei Terebinthinæ Volatilis pro Diuretico, et *a* ℥ss. *ad* ℥ii. pro Cathartico.

* Under the head of officinal preparations, I have particularized only some of the most important. The resins and turpentines enter into the composition of many ointments, cerates, and plasters, which I have thought it unnecessary to specify.—J. D. M.

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Malva sylvestris.

MALVA SYLVESTRIS. Common Mallow.

Class and Order, MONADELPHIA POLYANDRIA. Nat. Ord. MALVACEÆ.

GEN. CHAR. *Styles* numerous; *Calix* double, exterior of three leaves; *Capsules* numerous, circularly arranged, one-seeded.

Malva *sylvestris;* stem erect, herbaceous; leaves with five or seven acute lobes; peduncles and petioles hairy.

M. sylvestris, *Lin. Sp. Pl.* 969. *Fl. Brit.* 740. *Engl. Bot.* t. 671. *Woodville, Med. Bot.* i. p. 148. *Fl. Lond.* ed. 2. v. ii. *Hooker, Br. Fl.* p. 314. *Don, Syst. Gard.* v. p. 462.

ROOT perennial, long, thick and fleshy; stems several, two to four feet high, much branched; flowers large, purplish red, growing three or four together from the axils of the leaf-stalks. The whole plant is mucilaginous, particularly the seeds and roots, and, from the abundance in which the species is found in most parts of the kingdom, may be advantageously substituted for the marsh-mallow, *Althæa officinalis*, which is comparatively of rare occurrence, their properties being identical.

The whole of this natural family abounds in mucilage, and, though of considerable extent, there is no individual known that is possessed of noxious qualities, being all nutritious, emollient, and mucilaginous. The common mallow is found on banks and in hedge-rows, and when in blossom, is particularly conspicuous from its large and handsome flowers, which are produced in great profusion from June to September. Seventy-five species are described in *Don's System of Gardening and Botany.*—G.

From the quantity of mucilage which the common mallow contains it is frequently used as a demulcent. In the form of a decoction it is administered in chronic diarrhœas and in diseases of the bladder. In France, an infusion of the flowers is frequently prescribed in irritation of the bronchiæ and mucous membranes.*

A decoction of the leaves and roots is used as an emollient glyster, and the leaves and roots themselves are made into poultices.—J. D. M.

Officinal. Flores et Radices.

Officinal preparation. Decoctum Malvæ Compositum pro Enemate.

* Dictionnaire des Drogues, iii. 441.

PLATE 36.

ALTHÆA OFFICINALIS. *Marsh-Mallow.*

Class and Order, MONADELPHIA POLYANDRIA. Nat. Ord. MALVACEÆ.

GEN. CHAR. *Styles* numerous; *Calix* double, exterior, of six to nine leaves; *Capsules* numerous, circularly arranged, one-seeded.

Althæa *officinalis;* leaves soft and downy on both sides, cordate, or ovate, toothed, entire, or three-lobed; peduncles axillary, many-flowered, much shorter than the leaves.

A. officinalis. *Lin. Sp. Pl.* 966. *Fl. Brit.* 739. *Engl. Bot.* t. 147. *Woodville, Med. Bot.* v. i. t. 53.

THE Marsh-Mallow is found in many parts of Britain, and is most abundant in marshes near the sea. It is clothed with a dense pubescence, which renders the leaves exquisitely soft; it attains two or three feet in height, and has large, showy, pale rose-coloured flowers, often tinged with blue. It is in great estimation on the continent of Europe, particularly in France, and its mucilage is formed into lozenges for pectoral complaints.—G.

The *Althea officinalis* does not differ in its medicinal properties from the common mallow; it contains even more mucilage than that plant. A proximate vegetable principle was discovered in it by M. Bacon, and named by him *Altheine.* * This has been examined by M. Plisson and various other continental chemists, and is now named *Asparagine.* It is contained in several other vegetables.—J. D. M.

Officinal. Radices.

Officinal preparations. Syrupus Altheæ, *Lond. Edin.* Decoctum Altheæ, *Edin.*

Dosis *a* lb.i. *ad* lb.ii. Decocti in dies; *a* ʒi. *ad* ʒii. Syrupi.

GOSSYPIUM HERBACEUM. Common Cotton.

Class and Order, MONADELPHIA POLYANDRIA. Nat. Ord. MALVACEÆ.

GEN. CHAR. *Calix* double, cup-shaped, bluntly five-toothed, exterior three-leaved, leaflets connected at the base, cordate, jagged; *Stigmas* three or five; *Capsule* three or five-celled, many seeded; *Seeds* enveloped in cotton.

* Berzelius, Traité de Chimie, vi. 164.

Gossypium *herbaceum;* leaves five-lobed, with a gland beneath, lobes rounded, mucronate; leaves of the outer calix serrated; stem even, smooth.

G. herbaceum, *Lin. Sp. Pl.* 975. *Don, Syst. Gard.* i. p. 486.

The plants producing cotton, though not at present introduced into the British Pharmacopœias, merit particular notice, as furnishing a substance which has of late years been most advantageously employed in cases of severe burns and scalds. The most convenient preparation of this article is that known in domestic use by the term wadding.

Gossypium is thought to be derived from the Arabic word *Goz* or *Qoz*, which signifies any soft or silky substance, from which is derived the Latin name. The down or cotton is found almost filling the capsules, and closely investing the seeds. Seventeen species are described, but there is much to learn of this interesting genus. The *herbaceum* is the only species cultivated in Europe for economical purposes, particularly in the Levant, Malta, Sicily, and Naples; it is likewise grown in many parts of Asia. This species is sown in spring, and yields its crop in the following October. The *hirsutum* is grown in the West Indies, but the *Barbadense* is the species generally cultivated; it is sown in drills in the beginning of October, and rises six feet high, yielding two crops annually. In the East Indies the *arboreum*, which rises to a tree twelve feet high, is cultivated. A bland oil is extracted from the seeds of the *herbaceum*, which is used for culinary and domestic purposes.

The species which produces the cotton of which Nankeen Cloth is manufactured is supposed to be the *religiosum;* its cotton is at first of a deep buff, almost copper colour, which by washing and exposure finally assumes the tint usually known by the term nankeen. Pliny says that cotton was manufactured into garments for the Egyptian priests.

The filaments or threads of cotton are barbed, so as when in close contact to adhere firmly together. Manufacturers have taken advantage of this; and cotton manufactured into a variety of fabrics constitutes a large proportion of the clothing of most of the inhabitants of civilized countries. The British cotton factories are probably the most extensive in the world, and afford employment to an immense part of the population.

The seeds of the Bombax, or silk cotton tree, are surrounded by a substance called silk-cotton; the trees are among the largest of the countries they inhabit. The trunks of the *B. ceiba* in the West Indies are sometimes so large that they are hollowed and used as canoes, and are capable of carrying twenty-five tons or more.

An East India species, the *pentandrum*, rises to more than an hundred feet high, and produces a fruit the size of a swan's egg, which opens into five parts and is filled with a short dark-coloured silky cotton. In consequence of the threads or filaments being perfectly smooth, it is incapable of being manufactured into cloth, but in its raw state is equally efficacious when applied to recent burns or scalds.—G.

CASSIA. Senna.

Class and Order, Decandria Monogynia. Nat. Ord. Leguminosæ.

Gen. Char. *Calix* five-leaved; *Petals* five, equal; *Stamens*, three superior sterile, three lower beaked; *Legume* membranaceous, two-valved.

The uncertainty prevailing as to the plant producing what is called Senna, has tended greatly to the introduction of various kinds of *Cassia leaves, as those of the officinal species, as well as the leaves of a considerable variety of other plants.* Whether the leaves vary in form on the same plant, we are ignorant; but the figures given by foreign as well as English writers are by no means sufficiently determined to identify the species.

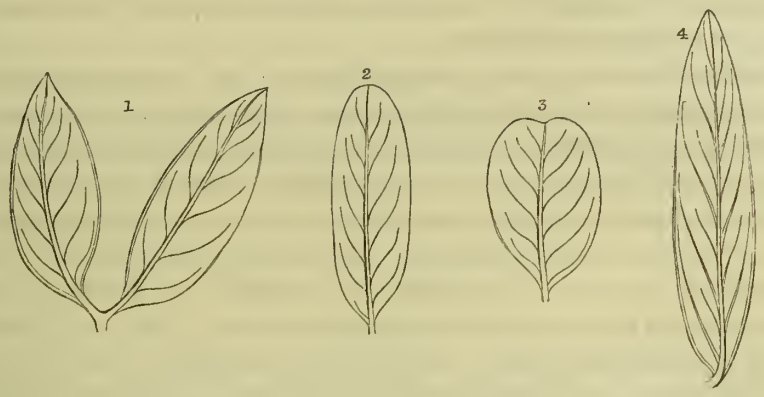
That I may not perpetuate errors, I have not attempted to do more than give correct figures of those leaves which we find in every sample of senna; and, as these correspond with the figures of Hayne, I have affixed his name to the species.

All the true Sennas have the portions of their leaves unequally divided. In some kinds the lower part of one side is reduced to little more than a line in breadth, whilst the other is from a quarter to half an inch in breadth, as will be particularly observed at figures 1, 2, 3, 4. The Cassias form an extensive family, and are found in the warmer parts of both hemispheres.

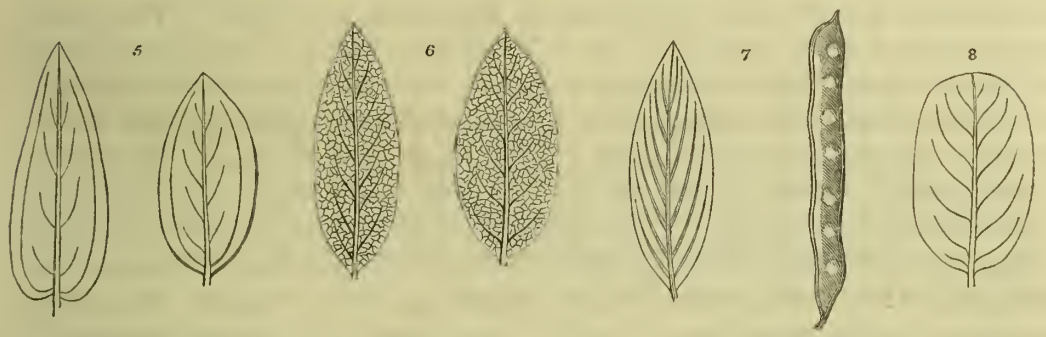
That drug known under the name of East Indian senna is nearly free from adulteration; and as its properties appear identical with those of the Alexandrian, and the price being less, it probably will supersede it in general practice. Its size and shape readily identify it. A species now growing in the Conservatory at the Royal Botanic Garden, Edinburgh, has leaves of a similar form with the last-mentioned kind, (the *acutifolia* of Hayne, *lanceolata* of some other botanists, Fig. 4,) but the veining of the leaves is widely different. How far they may correspond in properties I am unable to determine; but, judging from the taste of the dried leaves of the one and fresh ones of the other, there appears but a trifling difference.

No drug in the Materia Medica is subject to more considerable and noxious adulterations than that known in the shops as Alexandrian senna,—an article imported from the Levant, and various parts of Greece and Turkey, where several species are indigenous. The old officinal name of *Cassia senna* is very properly discarded, the officinal senna being a compound of the leaves of a variety of species, which appear to possess similar properties, the principal of which are *C. lanceolata*, Fig. 1; *C. obovata*, Fig. 2; *C. obtusata*, Fig. 3. These,

when free from any other admixture, form the genuine Alexandrian senna; but it is rarely found in the drug market in this state.



The adulterations are exceedingly numerous, as the finest samples that can be procured in our drug warehouses evidently attest; but there is considerable obscurity as to the articles surreptitiously introduced, from their being mostly so broken down that entire leaves are not readily found. Of those with which we are best acquainted I have annexed correct figures, by which any practitioner will be enabled to form a judgment as to the positive purity of any sample he may meet with. One of the most noxious is the *Coriaria myrtifolia*, Fig. 5,



a plant belonging to the natural family of *Coriariæ*, and possessing very poisonous properties. The leaves of this plant when entire may always be detected by their regular shape, and the peculiar arrangement of the veins; it is an adulteration much more common on the continent of Europe than in this country. With respect to the Argel, *Cynanchum oleæfolia*, Fig. 6, Dr Christison suggests, " the adulteration is obviously not a fraud, but intended to form a specific mixture." Dr A. T. Thomson has figured the leaf at page 306, Fig. 3. v. ii. of his Elements of Materia Medica, but the figure and description will scarcely enable any one to identify the leaf. Their substance is thick, coriaceous, and the whole surface is rough, not with pubescence, but as if granular; the portions of the leaves are equal, and, though described as possessing only a central vein or mid-rib, there are present in all the specimens that have fallen under my notice five or six obscure lateral veins; but what will always detect it, though broken down to small fragments, is thickness of the texture, and roughness of surface, joined to which it is always browner coloured than any of the true sennas.

Another common but spurious leaf and seed-vessel, abounding in most of the Alexandrian and Tripolian sennas, belong to a species of *Tephrosia*. These will be immediately known, the leaves being of a regular form, and having their lateral veins placed in deep grooves. A leaf and pod are represented at Fig. 7.

Of all the fictitious senna leaves, the least injurious, or, I may perhaps justly say, the most beneficial, are the leaves of the *Colutea arborescens*, the common bladder-senna, (Fig. 8.) They possess cathartic properties, appear equally powerful, and are quite devoid of the nauseous taste and smell of the true drug; and, should a course of experiments now in progress confirm the present opinion, it may probably supersede the use of senna.—G.

Senna is a useful and common purgative. It is usually given in the form of infusion, and is very certain in its operation; it is admissible in most diseases, and is only objectionable from its nauseous taste, and from occasionally giving rise to tormina. The first of these objections is got rid of by mixing the infusion with molasses, or, according to Dr Paris, by adding the infusion of Bohea tea, and mixing cream and sugar with the united infusions in the same way as with common tea. The second objection is also got rid of by adding some aromatic, such as ginger, or coriander seed. The syrup of senna, which is prepared with molasses, is an excellent medicine for children, as it is easily taken, and is mild in its operation. The leaves of the *C. acutifolia* (Hayne), which are known in this country by the name of "East Indian senna," are the produce of Arabia Felix; they are much milder in their operation than the leaves of *C. lanceolata*, "Alexandrian senna," and seldom cause griping, and are coming into general use in this country; they are very highly esteemed in India.* The quantity of senna sent to Boulac does not, as Dr A. T. Thomson informs us, exceed two millions of pounds, but about double that quantity is exported, which shows the extent to which adulteration is carried. Dr Thomson, on the authority of Bouver and Colladon, gives the following as the composition of the senna, so called, which is sent to Europe: Five parts of *Cassia acutifolia, lanceolata* (of Hayne), (true senna,) three parts of *C. obovata*, and two parts *Cynanchum oleæfolium* or argel.† The most dangerous and fraudulent adulteration is that of adding the leaves of the *Coriaria myrtifolia*, which are highly poisonous.‡ Lassaigne and Feneulle give the following analysis of the *C. acutifolia, lanceolata* (of Hayne): Chlorophylle and green colouring matter; fixed oil; volatile oil existing in minute quantity; albumen; a proximate principle to which they give the name of *Cathartine*; a yellow colouring matter; mucilage; free malic acid; malate and tartrate of lime; acetate of potass, and some mineral salts. *Cathartine*, which may be considered as the active principle of senna, is prepared by adding acetate of lead to a decoction of senna as long as any precipitate falls, freeing the liquid from the excess of lead by sulphuretted hydrogen, and evaporating the liquid to the consistence of extract; by acting on this with alcohol, *Cathartine* is taken up, along with a peculiar extractive and acetate of potass, to free it from which sulphuric acid is added in excess. Carbonate of lead is now added to get rid of the sulphuric acid, and the lead is precipitated by sulphuretted hydrogen. The liquid is then filtered and evaporated, and the *Cathartine* is obtained in a state of purity. It is of a deep reddish yellow colour, and does not crystallize.

* Ainslie's Materia Indica, i. 389.

† Thomson's El. Mat. Med. and Therapeutics, ii. 306.

‡ Richard, Hist. Nat. Medicale, ii. 523.

It has a peculiar odour and a nauseous bitter taste. It attracts moisture from the air, and is soluble in alcohol and in water; it is insoluble in ether. Chlorine whitens and decomposes it; Iodine has no effect. The alkalies deepen the colour of its solutions. It is not precipitated by the solutions of the acetate of lead, nor by tartar-emetic. The infusion of galls throws down a light yellow precipitate. It exerts no alkaline reaction, nor does it unite with acids. Peschier and Jacquenin have found *Cathartine* in the *Cytisus alpinus*, the *Anagyris fœtida*, and in the *Coronilla varia*, and in many other plants.* The characters of *Cytisine* and of *Cathartine* are so much alike, that Berzelius regards them as the same substance, and, from some experiments I have made with regard to *Cytisine*, I am inclined to subscribe to his opinion. —J. D. M.

Officinal. Folia.

Officinal preparations. Tinctura Sennæ, *Lond. Dub.* Tinctura Sennæ Composita, *Edin.* Syrupus Sennæ, *Lond. Edin. Dub.* Infusum Sennæ, *Dub. Edin.* Infusum Sennæ Compositum, *Lond. Edin.* Electuarium Sennæ, *Lond. Edin. Dub.* Pulvis Sennæ Compositus, *Lond.*

Dosis, *a* ℈ii. *ad* ʒiss. Foliorum; *a* ℥ss. *ad* ℥i. Tincturæ et Tincturæ Compositæ; *a* ℥ss. *ad* ℥i. Syrupi; *ab* ℥ii. *ad* ℥iv. Infusi; *ab* ℥i. *ad* ℥ii. Infusi Compositi; *a* ʒi. *ad* ℥ss. Electuarii; *a* ℈i. *ad* ʒi. Pulveris Compositi.

CATHARTOCARPUS FISTULA. Purging Cathartocarpus.

Class and Order, Decandria Monogynia. Nat. Ord. Leguminosæ.

Gen. Char. *Calix* of five leaves, deciduous; *Corolla* regular, of five petals; lower filaments bowed; *Pod* long, round, woody, many-celled; *Cells* filled with pulp.

Cathartocarpus *fistula;* leaves in five pairs.

C. fistula, *Persoon, Syn.* i. p. 459.

Cassia fistula, *Lin. Sp. Pl.* 540. *Woodville, Med. Bot.* ii. p. 449, t. 163.

This species forms a tree of from thirty to forty feet in height, and produces its leaves of five pairs of leaflets, of a delicate green, oblong, and pointed. Flowers large, showy, and fragrant; pods about an inch in diameter, and from one to two feet in length, which at first are green, but as they advance to maturity, become of a deep-brown; the seeds are enclosed in separate partitions, or cells, which are, when ripe, filled with a black pulpy substance, possessing considerable cathartic powers, from which circumstance the plant has obtained its present generic appellation.

A native of the East Indies and Africa; has been cultivated in Great Britain since 1731.—G.

* Berzelius, Traité de Chimie, vi. 274.

SPIGELIA MARILANDICA. Maryland Worm-Grass, or Carolina Pink.

Class and Order, PENTANDRIA MONOGYNIA. Nat. Ord. GENTIANÆ.

GEN. CHAR. *Corolla* funnel-shaped; *Stigma* simple; *Capsule* two-celled, double.

Spigelia *Marilandica;* stem simple, quadrangular, leaves opposite, sessile, lanceolate.

S. Marilandica, *Wild. Sp. Pl.* i. 824. *Bot. Mag.* t. 80.

THE Spigelia is a native of North America, possesses a perennial root, and is not of easy cultivation in this country. I have succeeded with it in the open border, by planting it in a pot, in the bottom part of which was a quantity of fragments of pots to afford a ready drain of excessive moisture; the soil should be a sandy peat mixed with loam, and the pot should be plunged in the border. Stems about a foot high, four-sided, the leaves growing in opposite pairs; flowers terminal, growing from one side of the stem and placed on short foot-stalks, the blossoms open in succession, commencing from the bottom, and rarely more than two or three are expanded at one time. This plant is used as a vermifuge in North America. Another species, common in the West Indies, *S. Anthelmia*, is extensively used for the same purpose.—G.

The *Spigelia Marylandica* is very seldom employed medicinally. The root and leaves are both active. They have a bitter nauseous taste, and are sometimes used in intermittents. Dr Duncan mentions, that an emetic is generally prescribed before the Spigelia is given; he also mentions, that Dr Barton recommends an infusion of the root "in the insidious remitting fever of children, which often lays the foundation of hydrocephalus." According to Feneulle, the leaves contain chlorophylle mixed with fixed oil; albumen; a nauseous bitter substance analogous to that of leguminous plants; mucilage; gallic acid; woody fibre; malate of lime; potass, &c. His analysis of the root is as follows: fixed and volatile oil; albumen; a small quantity of resin; bitter nauseous principle; sweet mucilage; gallic acid, &c.* Wackenroder gives the following analysis of the root: 3.13 of acrid resin; 4.89 of a peculiar bitter principle forming a grey precipitate with the salts of iron: 10.56 of a particular species of tannin, which becomes green when brought into contact with a salt of iron; 82.69 of woody fibre; traces of fixed oil.† The bitter matter will probably be found to be *Gentianine*.—J. D. M.

Officinal. Radix.

Dosis, *a* ℈ss. *ad* ℈i.

* Dictionnaire des Drogues, v. 29.

† Berzelius, Traité de Chimie, vi. 215.

CONVOLVULUS Scammonia. Scammony.

Class and Order, Pentandria Monogynia. Nat. Ord. Convolvulaceæ.

Gen. Char. *Corolla* campanulate; *Capsule* two-celled, two-seeded; *Stigma* two-cleft.

Convolvulus *Scammonia;* leaves sagittate; peduncles round, three-flowered.

C. Scammonia, *Wild. Sp. Pl.* i. 844. *Woodville, Med. Bot.* ii. p. 243. t. 86.

Root long, tapering, fleshy, throwing numerous tender stems, which, like all the climbing species of Convolvuli, entwine themselves round any stems or twigs they come in contact with. They extend to a great length, sometimes to nearly twenty feet; flowers pale sulphur colour, growing out from all parts of the stems. The drug scammony is procured from the roots, which are cut off obliquely at the crown,—some vessel being introduced so as to receive the juice that runs from the wounded part; when this is hardened it forms the scammony of the shops, but it is frequently adulterated by being mixed with sand and other impurities. This is an extensive genus; fifty-eight species are enumerated; but, as the genus is now constituted, only one species, *C. arvensis*, is British, *sepium* and *Soldanella* being removed to the genus *Calystegia*.

Scammony is a native of the Levant, Turkey, Syria, Persia, and Cochin-China, but the plant has been cultivated in England since 1596.—G.

Scammony is a drastic purgative and vermifuge. It ought to be prescribed in combination with some demulcent, when given without the addition of some other purgative, as it is apt to cause tormina. The action of scammony is very similar to that of jalap. The best comes from Aleppo, but even this is occasionally adulterated with flour, sand, or earth; when pure, it is in light spongy masses, of a dark ash colour, of a disagreeable heavy smell. A very inferior kind is brought from Smyrna. This is more compact, and has less odour; it is said to be the produce of the *Periploca scammonium*. The following comparative analysis will show the inferiority of the Smyrna scammony.

	Aleppo Scammony.	Smyrna.
Resin, - -	60.	29.
Gum, - - -	3.	8.
Extractive, - -	2.	5.
Refuse and earthy matter,	35.	58.*

As the resin is the active part, it will be at once seen that the Smyrna is greatly inferior to the Aleppo. The resin of Aleppo scammony is of a clear transparent yellow colour, brittle, easily soluble in alcohol. That of Smyrna is brown, transparent, not easily reduced to powder, and not so soluble in alcohol.—J. D. M.

* Dictionnaire des Drogues, iv. 522. (Analysis by Bouillon Lagrange and Vogel.)

Officinal. Gummi Resina.

Officinal preparations. Pulvis Scammoneæ Compositus, *Lond. Edin.* Confectio Scammoneæ, *Lond.* Electuarium Scammoneæ, *Dub.*

Dosis, *a* gr. v. *ad* xii. Gummi Resinæ; *a* gr. x. *ad* ℈i. Pulveris Compositi; *a* ℈i. *ad* ʒi. Confectionis et Electuarii.

IPOMÆA JALAPA. Jalap.

Class and Order, PENTANDRIA MONOGYNIA. Nat. Ord. CONVOLVULACEÆ.

GEN. CHAR. *Corolla* funnel-shaped; *Capsule* three-celled; *Stigma* capitate.

Ipomæa *Jalapa;* Stem warted; leaves cordate, ovate, rugose, villous beneath, entire or lobed; peduncle one-flowered, seed woolly.

I. Jalapa. *Pursh, Fl. Amer. Sept.* i. 146.
Convolvulus Jalapa, *Willd. Sp. Pl.* i. 860. *Woodville, Med. Bot.* i. t. 21. *Bot. Mag.* 1572.

THE plant producing jalap is a native of Mexico, and requires the heat of the stove in Britain. It is an elegant twining plant, the root large and spindle-shaped, from which arise numerous slender stems, as in the *Calystegia sepium.* The flowers are sometimes of a dark crimson, at others of a pale rose-colour; large, of only one day's continuance, but as they are produced in considerable abundance, the plants are rarely without blossom during the season. It is presumed that the specific name of the plant as well as the drug jalap, is derived from Xalapa, near Mexico, where the plant is found wild, and from which the roots are imported. One hundred and nine species are mentioned in Hortus Britannicus—G.

Jalap is a safe and effective purgative. In moderate doses it acts without causing tormina, but in an over-dose it excites hypercatharsis and violent pain, and sometimes produces dangerous symptoms; Dr Christison, speaking of its poisonous qualities, says, "this every one ought to know, as severe and even dangerous effects have followed its use in the hands of the practical joker."* In combination with calomel, jalap forms one of the most valuable purgative formulæ, especially in local inflammation,—in ophthalmia for example. The best proportions are in the following ratio: 5 grains of calomel to 15 of jalap, 4 to 12, and so on. Cadet de Gassicourt has analysed jalap, and has found it to consist of 10.0 parts of resin, of which 3.0 are soluble in ether, which on evaporation leaves a soft greasy resin; 2.5 of starch; 2.5 of vegetable albumen; 44.0 of gummy extract soluble in water; 29.0 of woody fibre; 0.8 of phosphate of lime; 1.6 of chloride of potass; 0.6 of salts of potass, iron and lime, with the vegetable acids; 2.4 of water; and 6.6 loss. The decoction of jalap is preci-

* Christison on Poisons, 529.

pitated by infusion of nut-galls, and by the salts of iron. Gerber's analysis is much more perfect than Gassicourt's. According to him the composition is as follows: 7.8 of hard resin; 23 of soft resin; 17.9 of extractive; 14.5 of gummy extract; 8.2 of colouring matter, which strikes a red colour with the alkaline carbonates; 1.9 of uncrystallizable sugar; 15.6 of gum mixed with various salts; 3.2 of vegetable mucilage; 3.9 of vegetable albumen; 6.0 of starch; 8.2 of woody fibre; a variety of salts which it is unnecessary to specify. * Herberger has given the name of *Jalappine* to a resin obtained from jalap, by precipitating the alcoholic solution of the compound resin of jalap by acetate of lead; the liquid which remains after the precipitate has fallen, he evaporates and calls *Jalappine*, considering it as a vegetable alkali, from the property it possesses of uniting with acids.† It is a clear yellow resin, and is occasionally used medicinally on the continent. Hume of London discovered what he considered to be the active principle of jalap in the proportion of five grains from an ounce of the root. He sent the sulphate to Pelletier, who, on examining it, pronounced it to be inorganic.‡ Orfila quotes M. Felix Cadet de Gassicourt's Inaugural Dissertation on Jalap at full length, from which it appears that jalap proves fatal when rubbed into the skin for a length of time, or when placed in contact with the pleura, or when given in a large dose, but not when injected into a vein.§ There seems from the above statements considerable uncertainty as to what the active principle of jalap really is. The subject is worthy of further investigation.—J. D. M.

Officinal. Radix.

Officinal preparations. Pulvis Jalapæ, *Lond. Edin. Dub.* Pulvis Jalapæ Compositus, *Edin.* Extractum Resinosum Jalapæ, *Dub. Lond. Edin.* Tinctura Jalapæ, *Lond. Edin. Dub.*

Dosis, *a* gr. x. *ad* xv. Pulveris Radicis; *a* ʒss. *ad* ʒi. Pulveris Compositi; *a* gr. v. *ad* xii. Extracti; *a* ʒiss. *ad* ʒss. Tincturæ.

ROSA CANINA. *Common Dog-Rose.*

Class and Order, Icosandria Pentagynia. Nat. Ord. Rosaceæ.

Gen. Char. *Calix* urn-shaped, fleshy, contracted at the orifice, terminating in five segments; *Petals* five; *Pericarps* numerous, bristly, attached to the inside of the calix.

Rosa *canina;* prickles uniform, hooked; leaves naked or slightly hairy, their disk eglandulose; calix-segments fully pinnate, deciduous; styles not united; shoots assurgent.

R. canina, *Lin. Sp. Pl.* 704. *Fl. Brit.* 540. *Engl. Bot.* 992. *Woodville, Med. Bot.* iii. p. 377. *Fl. Lond.* ed. 2, i. *Hooker, Br. Fl.* p. 236.

* Berzelius, Traité de Chimie, vi. 184.

† Ibid. v. 527.

‡ Dictionnaire des Drogues, iii. 283.

§ Orfila, Toxicologie Generale, i. 683.

Few plants are subject to so great diversity of form in their different parts as the roses generally, and, amidst the conflicting opinions as to specific differences in our native kinds, I feel strongly disposed to think that the number has been most unnecessarily increased; those parts, on which the greatest reliance has been placed from their being least liable to vary, must be acknowledged to be, nevertheless, inconstant in their character. This will be the more apparent, if a plant of either of the wild kinds be transplanted so as to be immediately under observation, or a particular individual be constantly observed at different periods. The prickles will be at one time hooked, at another strait, or nearly so, sometimes intermixed with numerous glandulous hairs or *setæ*, again with setæ only, and, whether the stalks or fruit be noticed, they will be found equally liable to alter from circumstances. The dog-rose varies in depth of colour from almost pure white to a deep red, also with double or semi-double flowers. Dr Hooker describes nineteen species as indigenous to Britain, but the varieties are interminable. Upwards of three hundred varieties of the Scotch rose, *Rosa spinossissima* are to be found in some nurseries. Of the present species, Professor Hooker enumerates five varieties, to which may be referred the following species of different authors, *canina*, *sarmentacea*, *glaucophylla*, *sarculosa*, *venosa*, *dumetorum*, *Forsteri*, *collina*, *campestris*; but it is of no material consequence to the practitioner from which of the varieties he obtains the fruit, which is the only officinal part. The fruit or hep has an agreeable acid taste, and is ripe about the month of September, but in many kinds they remain on the bushes during the winter; yet, if deferred to be gathered until the frost commences, they lose much of their acidity.—G.

The petals of the dog-rose are not used medicinally. A conserve is prepared from the fruit, which is sometimes prescribed as a demulcent. The utmost care is necessary in preparing this conserve, as the small sharp hairs which surround the seeds create great irritation in the throat and fauces. Berzelius gives the following analysis of the fruit when deprived of the seed: a trace of volatile oil; 0.065 of fixed oil; 0.050 of wax; 1.88 of resin; 0.260 of tannin, which strikes a green with the salts of iron; 25.00 of gum; 30.00 of uncrystallizable sugar; 2.95 of citric acid; 7.76 of impure malic acid; 14.00 of vegetable fibre; 4.552 of epidermis; 12.865 of water; and a variety of salts of the vegetable acids with potass, lime, &c. Curious moss-like excrescences are frequently found on this variety of the rose; they are produced by the puncture of an insect, and resemble galls in their composition. —J. D. M.

Officinal. Fructus.

Officinal preparation. Confectio vel Conserva Rosæ Caninæ, *Lond. Edin.*

Dosis, *a* ʒii. *ad* ʒvi. Conservæ.

ROSA CENTIFOLIA. Hundred-leaved Rose.

Class and Order, Natural Order, and Generic Character, see *R. canina.*

Rosa *centifolia;* spines unequal, the lower falcate; leaflets with glandular hairs; flowers nodding; calix viscid; fruit oblong.

R. centifolia, *Lin. Sp. Pl.* 704. *Woodville, Med. Bot.* iii. p. 379.

The present species, a native of the south of Europe, was formerly the most commonly cultivated of garden roses, but since the rage for varieties, it has sunk into comparative neglect: it forms a bush from three to six feet high, and produces a profusion of flowers, whose fragrance is not surpassed by any of the more showy kinds. This fragrance, which is so esteemed in the open air, soon becomes oppressive in a confined room, and even life has been endangered by persons being confined in rooms with a quantity of the flowers. From experiments by Drs Priestley and Ingenhousz, this effect was considered to arise from *mephitic* gas, exhaled by this and other odoriferous flowers, which spontaneously diffuse their odours. Nearly one hundred varieties of this species are to be met with in our gardens, and so great is the demand for varieties of roses, that in the nurseries of Messrs Loddiges of Hackney, near London, upwards of fourteen hundred named sorts are cultivated.—G.

The *Rosa centifolia* is chiefly valued for the fragrance of its flowers; it is or ought to be used in the distillation of rose-water, but this is rarely done, the rose-water which is usually met with being made by adding an alcoholic solution of the essential oil to distilled water. The essential oil, otto, attar, or uttir, is prepared in Turkey, Persia, and other eastern countries, and is very highly esteemed as a perfume. Various species are used in its preparation, but the *Centifolia*, *Sempervivens*, *Damascena*, and *Moschata* yield the greatest quantity, and the highest flavoured oil. Berzelius gives the following account of the distillation of the attar: Alternate layers of rose leaves and the seeds of a species of *Digitalis* are placed in contact; the seeds contain a large quantity of fixed oil, which absorbs the essential oil of the leaves; fresh portions of leaves are added to the same seeds, which, when fully impregnated, are pressed, and the oil which exudes is separated from the watery juice by means of fine cotton. This oil, which consists of the fixed oil of the seeds and volatile oil of roses, is distilled, and the oil which passes over is the pure attar. * Berzelius supposes that by this process the attar is obtained of a finer flavour than that procured by the repeated distillation of the same water with fresh quantities of leaves. The pure attar congeals at the ordinary temperature of the air; it becomes fluid at about 80° F.

* Traité de Chimie, v. 419.

It varies in colour, but is usually of a lemon yellow. Dr Duncan mentions that Colonel Polier "had attar of a fine emerald green, of a bright yellow, and of a reddish hue in the same year, from the same ground, and by the same process, from roses collected on different days. * The quantity obtained is extremely small, only three drachms being procured from a hundred pounds of the leaves. Hoffman states the quantity somewhat higher,—sixty-two grains from twenty-five pounds. Homberg states the quantity still higher,—two drachms from twenty-five pounds. † Attar is composed of two distinct substances, the one fluid (Eleoptine,) which is the most fragrant, the other solid (Stearoptine,) is white, crystalline, and at the ordinary temperature of the air of the consistence of wax. It can be procured by pressing the frozen oil between folds of bibulous paper, which absorbs the fluid, and leaves the solid portion. It is not readily dissolved by cold alcohol. I have procured it perfectly pure, and in beautiful crystals, by the following process: To a small quantity of attar cooled down to 32° F., I added alcohol (sp. gr. 863,) and gradually raised the temperature till the solution was nearly effected. I then put it into a freezing mixture, and as it cooled down I observed numerous small brilliant plates forming and floating about in the liquid; these I separated by filtration, and washed with alcohol at about 20° Fahr. The crystals were in the form of irregular plates.

The petals of the *R. centifolia* are occasionally given as laxatives, and a syrup prepared from them is frequently administered to children. In India the leaves of the *moschata* are occasionally prescribed.—J. D. M.

Officinal. Petala.

Officinal Preparation. Aqua Rosæ Centifoliæ, *Edin. Lond. Dub.* Syrupus Rosæ Centifoliæ, *Edin. Lond.*

Dosis, *ab* ʒi. *ad* ʒiii. Aquæ Rosæ; *a* ʒij. *ad* ʒi. Syrupi.

ROSA GALLICA. Officinal Rose.

Class and Order, Natural Order and Generic Character, see *R. canina.*

Rosa *gallica;* spines weak, nearly equal, of the same shape; leaflets rigid, elliptical; flowers erect; fruit nearly round.

R. gallica, *Lin. Sp. Pl.* 704. *Woodville, Med. Bot.* iii. p. 382.

This, like the preceding species, is a native of the south of Europe, but has long been an inhabitant of our gardens. It is of more humble growth than the *centifolia*, with deeper

* Duncan's Supplement to the Dispensatory, 97. † Dictionnaire de Drogues, iii. 173.

coloured flowers, the petals of which, though large, are not nearly so numerous, nor does it possess the fragrance so much admired in that species. Loudon mentions nearly two hundred varieties of this species; all the kinds are of easy cultivation, growing readily from layers, cuttings, or seeds, from the latter new varieties are raised; they all prefer a pure air, but some kinds bear the smoke of large towns uninjured, whilst others are almost immediately destroyed in the same situations.—G.

The petals of the *Rosa gallica* are valued for their fine colour and for their astringency; but they possess but little fragrance. An infusion prepared from them, and acidulated with sulphuric acid, is an excellent gargle in relaxation of the throat, and is a very good vehicle for nauseous drugs. A confection is prepared by grinding the fresh petals with sugar, and is much used for giving consistence to pills and boluses. It is sometimes prescribed as an astringent.—J. D. M.

Officinal. Petalæ.

Officinal preparations. Infusum Rosæ Gallicæ, *Lond. Edin. Dub.* Confectio vel Conserva Rosæ Gallicæ, *Lond. Edin. Dub.* Syrupus Rosæ Gallicæ, *Edin.* Mel Rosæ Gallicæ, *Lond. Edin. Dub.*

Dosis, *ab* ʒii. *ad* ʒviii. Infusi; *a* ʒi. *ad* ʒiii. Syrupi, Mellis, et Conservæ.

RUTA GRAVEOLENS. Common Rue.

Class and Order, Decandria Monogynia. Nat. Ord. Rutaceæ.

Gen. Char. *Calix* five-parted; *Petals* five, concave; *Receptacle* with ten nectariferous glands; *Capsule* lobed.

Ruta *graveolens*; leaves supra-decompound; leaflets oblong, terminal one obvate; petals entire.

R. graveolens, *Willd. Sp. Pl.* ii. 542. *Woodville, Med. Bot.* i. p. 108.

Rue is a native of the south of Europe, but bears the cold of our climate without injury. It is a low perennial shrub, with glaucous foliage, and greenish-yellow flowers, and is too well known to require description. It was formerly used in the service of the Roman Catholic church for sprinkling the holy-water among the congregation, from whence it derived its appellation of Herb of Grace.—G.

Every part of the Rue has a strong, aromatic, and rather disagreeable, odour, and a bitter, aromatic, and somewhat acrid, taste. It is not much used in Britain, but is held in considerable repute on the continent. It is stimulant, emmenagogue, and diuretic. Richard says that it ought to be given with great caution, as it is apt to cause uterine hemorrhage, inflammation of the uterus, and, under certain circumstances, abortion. It is used

as a vermifuge principally by the country people, with whom it is a favourite plant. It contains about a four-hundredth part of its weight of an essential oil, to which it owes its taste, smell, and medicinal properties. This oil is of a greenish or yellow-brown colour, which deepens by age. When exposed to cold it freezes, and regularly-formed crystals may be observed. Rue was held in great estimation by the ancients, both as a culinary and medicinal herb.—J. D. M.

Officinal. Herba.
Officinal preparations. Oleum Volatile.

LAVANDULA Spica. *Lavender.*

Class and Order, Didynamia Gymnospermia. Nat. Ord. Labiatæ.

Gen. Char. *Calix* ovate, somewhat obtuse, supported by a bractea; *Corolla* resupinate; *Stamens* included within the tube.

Lavandula *Spica;* leaves sessile, linear lanceolate, revolute at the edges; spike interrupted, naked at the summit.

L. Spica, *Lin. Sp. Pl.* 800. *Woodville, Med. Bot.* i. p. 150.

This species is a native of the south of Europe, but is extensively cultivated in many parts of this kingdom. It forms a low shrubby plant, from two to four feet in height, is of ready growth, and thrives well in soils that are too sterile for most other plants. Stems shrubby, the older ones covered with a loose dry bark; leaves numerous, linear, entire, hairy beneath, with the edges revolute; flowers of a light delicate purplish blue, growing in interrupted whorls.—G.

Lavender is fragrant, aromatic, stimulant, and antispasmodic; it is useful in hysteria and the nervous complaints of females; but it is chiefly valuable as a perfume. Immense quantities are grown for the use of the perfumer, who manufactures from the flowers an essential oil, which is the base of the majority of perfumes. The *Lavandula vera*, or narrow-leaved lavender, yields the most fragrant oil; the *L. Spica*, which is called the officinal species, is not so often used in the preparation of the oil, as it is much less fragrant. A great portion of the foreign oil of lavender, which is sent to this country, is the produce of the *L. Spica*, or broad-leaved variety, and is sold at a much cheaper rate, and considered much inferior to the produce of the *L. vera*, or English oil of lavender, as it is termed.

Oil of lavender, according to Proust, deposits about one-fourth of its weight of stearoptine, which he considers identical with camphor, and from which he proposes camphor should be procured for medicinal purposes. The oil, when poured on *Iodine*, detonates slightly,

and gives off a quantity of yellow smoke.* When shaken with strong acetic acid, it partly unites with it. Twenty-five pounds of the flowers of the *Lavandula vera*, or narrow-leaved variety of *L. spica*, yield from six ounces to nearly a pound of volatile oil. The *Lavandula spica* of the French, or the broad-leaved variety of British botanists, yields from nine ounces to one pound four ounces of oil.—J. D. M.

Officinal. Flores.

Officinal preparations. Spiritus Lavandulæ Distillatus, *Lond. Edin. Dub.* Spiritus Lavandulæ Compositus, *Lond. Edin. Dub.* Oleum Volatile Lavandulæ Spica, *Lond. Edin. Dub.*

Dosis, *a* ʒi. *ad* ʒiii. Spiritus; *a* ʒii. *ad* ℥ss. Spiritus Compositi; *a* gtt. iii. *ad* vii. Olei Volatilis.

MELISSA OFFICINALIS. *Common Balm.*

Class and Order, DIDYNAMIA GYMNOSPERMIA. Nat. Ord. LABIATÆ.

GEN. CHAR. *Calix* dry, flattish above, with the upper lip somewhat fastigiate; *Upper lip* of the corolla flat; lower crenate; *Anthers* cross-wise.

Melissa *officinalis;* whorls partly surrounding the stem; bracteas oblong, stalked; leaves ovate acute, serrated.

M. officinalis, *Lin. Sp. Pl.* 827. *Woodville, Med. Bot.* iii. p. 398.

ROOT perennial, fibrous; stems erect, from one to two feet or more high, quadrangular, smooth, branching from the bottom; leaves heart-shaped, serrated, of a lively green, standing on long foot-stalks; flowers white, with pale red spots, growing in whorls, which only half surround the stalks. The whole plant has an agreeable scent, and was formerly held in much estimation.

Balm is a native of the south of Europe, but thrives well in our climate. It was cultivated in this country in 1573.—G.

The common balm is occasionally prescribed in the form of infusion as a gentle tonic. It contains a very small quantity of volatile oil, having an odour resembling that of bergamotte and mint. Balm-tea is a common popular remedy in many complaints, especially in diseases of the bladder.—J. D. M.

Officinal. Herba.

* Berzelius, Traité de Chimie, v. 410.

MARRUBIUM VULGARE. *White Horehound.*

Class and Order, DIDYNAMIA GYMNOSPERMIA. Nat. Ord. LABIATÆ.

GEN. CHAR. *Calix* with ten ribs, and five or ten spreading teeth; the throat hairy; *Corolla* with the tube exserted; *Upper lip* straight, linear, cloven; lower one three-lobed, middle lobe the largest, emarginate.

Marrubium *vulgare;* stem erect; leaves roundish, ovate, toothed, wrinkled; calix with ten setaceous hooked teeth.

M. vulgare, *Lin. Sp. Pl.* 816. *Fl. Brit.* 636. *Engl. Bot.* 410. *Woodville, Med. Bot.* ii. p. 265. *Hooker, Br. Fl.* p. 279.

HOREHOUND is a common plant in many parts of England, but is less abundant in Scotland.

Root perennial, fibrous; stalks upright, one foot, to one and a-half high; leaves deeply serrated; flowers white, in crowded whorls; stems and leaves thickly coated with a white pubescence, which gives the whole plant a hoary appearance.—G.

Common horehound is a stimulant tonic expectorant; its taste is bitter, and slightly acrid, and its odour strong and unpleasant. It is principally used as an expectorant, and is occasionally of service, though it does not deserve the encomia which have been at different periods lavished on it. Many empirical preparations bearing the name of preparations of horehound are sold; of these perhaps the safest is the tablet, as it is not so likely to contain foreign matters, being commonly prepared by the confectioner. As to the liquid preparations, they are dangerous, from containing a quantity of spirit, which is not the best addition to an expectorant. In some varieties of asthma, and in chronic catarrh, horehound has been occasionally useful.

It contains essential oil, on which its odour and stimulant qualities depend; bitter extractive; gallic acid and tannin.—J. D. M.

CYDONIA VULGARIS. *Common Quince.*

Class and Order, ICOSANDRIA PENTAGYNIA. Nat. Ord. POMACEÆ.

GEN CHAR. *Calix* five-parted, with leafy divisions; apple closed, many-seeded; *Testa* mucilaginous.

Cydonia *vulgaris;* leaves downy, deciduous.
Pyrus Cydonia, *Lin. Sp. Pl.* 687. *Woodville, Med. Bot.* ii. p. 221.

The Quince is a low tree, with numerous branches; leaves ovate, entire, downy beneath; it is a native of many parts of Europe, and, though long cultivated for medicinal purposes, it possesses no qualities that are not more advantageously obtained from other substances. The seeds are the only officinal part, yielding an impure mucilage with boiling water.—G.

The quince has a somewhat austere, acid taste, and is seldom eaten till quite decayed; conserves of various sorts are prepared from it. The seeds contain a large quantity of mucilage, which is occasionally employed as a substitute for Gum-Arabic, but as it is incompatible with acids, and very readily enters into a state of fermentation, it has never been much used. One part of the seeds renders forty parts of water as viscid as the white of an egg.—J. D. M.

Officinal. Semina.
Officinal preparations. Decoctum Cydoniæ, *Dub.*
Dosis, *ab* ʒiv. *ad* lb. i. indies.

ACACIA VERA. *Egyptian Thorn or Gum-Arabic Tree.*

Class and Order, Nat. Ord. and Generic Character, see *A. Catechu*, p. 132.

Acacia *vera;* spines stipulary, in pairs, spreading; leaves bipinnate; primary division of two pairs, secondary of eight or ten pairs; a gland situated on the foot-stalk between each pair of leaflets.
A. vera, *Willd. Sp. Pl.* iv. 1085, n. 87. *Loudon's Ency.* p. 858.
Mimosa nilotica, *Lin. Sp. Pl.* 1506. *Woodville, Med. Bot.* ii. p. 167. t. 67.

Though the present plant is supposed to yield the drug known in the markets as Gum-Arabic, little doubt exists but that the same substance is produced by a considerable variety of Acacias, as well as other trees; and various kinds of stone fruit, as the plum, almond, and cherry, produce a substance resembling the finest Gum-Arabic. I have often used pieces gathered from cherry trees, which answered all the purposes of the true kind, for mixing with water colours. As to the identity of the tree which produces the Gum-Arabic of commerce, there is no satisfactory information which would induce us to attribute the produce to any particular species. From the best information I have been able to obtain, I believe that, at the proper season, persons are employed to collect gum, and are paid for their labour according to the quantity each obtains. When perfectly dry and hard, it is sorted and packed in bags for exportation; it is thus scarcely probable that the labourers, whose object is quantity, confine themselves to the produce of one

particular species, where numerous others yield a produce so similar, that the identity of the plant affording it cannot be determined.

The *Acacia vera* is a low tree of stunted growth, and unsightly appearance, the stem is covered with a smooth grey bark, the branches have a purplish tinge; the leaves grow alternately, and are composed of two pairs, each of which is composed of eight or ten pairs of leaflets. It is a native of sandy places in Barbary and Morocco. The best kind is that found in pure colourless or rather frothy-like tears, and exudes spontaneously from the tree.—G.

The Gum-Arabic of commerce is obtained from several species of Acacia. The best is said to be the produce of the *Acacia vera*. Dr Duncan says, "there are two kinds of gum found in the shops of this country, and often sold promiscuously, but distinguished in common by the names of Gum-Arabic and East India gum. Gum-Arabic consists of roundish transparent tears, colourless, or of a yellowish colour, shining fracture, without smell or taste, and almost perfectly soluble in water. The pieces which are most transparent and have least colour are reckoned the best. They are sometimes selected from the Gum-Arabic in sorts, and sold for about double the price, under the title of picked gum. The East India gum is darker coloured than Gum-Arabic, and is not so readily soluble in water. I have had gum from New South Wales darker coloured than East India gum, and less soluble. It is remarkable that the coarsest gum forms the thickest mucilage; at least Botany Bay gum forms a thicker mucilage than East India gum, and this than Gum-Arabic." Again, "about the middle of November, that is after the rainy season, which begins early in July, a gummy juice exudes spontaneously from the trunk and principal branches. In about fifteen days it thickens in the furrow down which it runs, either in a vermicular shape, or more commonly assuming the form of round or oval tears about the size of a pigeon's egg, of different colours, as they belong to the white or red gum tree. About the middle of December, the Moors encamp on the borders of the forest, and the harvest lasts six weeks. The gum is packed into very large sacks of tanned leather, and is brought on camels and bullocks to certain ports, where it is sold to the French and English merchants. In the year 1787, the quantity purchased by the former was 800,000 pounds, and by the latter 400,000."* Besides Gum-Arabic, all the species produce an astringent juice, analogous to catechu, and used for similar purposes. Gum-Arabic is used in medicine in all cases where there is a deficiency of the mucous lining of the intestines, in cases of bronchitis, in phthisis, both as a demulcent and for nutriment; in acrid poisoning, to defend the coats of the stomach. Externally it is applied as a mechanical styptic, as an injection in gonorrhœa and in ulceration or irritation of the rectum. I have found strong mucilage very useful in severe diarrhœa, and have given about half a pound of gum in this way for two or three days consecutively. Gum-Arabic combines with many salts, its action with silicate of potass is perhaps the more remarkable; when a solution of gum is added to this salt, two compounds are formed, the one a compound of gum and potass, which remains in solution, the other a compound of gum, silicic acid, and potass is precipitated. It also combines with sub-borate of soda, and forms a coagulum which becomes excessively hard when exposed to the air. With the salts of iron, this gum also forms definite compounds,† and by these tests it can be distinguished from other vegetable mucilages.—J. D. M.

* Duncan's Dispensatory, p. 183.

† Berzelius, Traité de Chimie, v. 218.

Officinal. Gummi.

Officinal preparations. Mucilago Acaciæ Arabicæ, vel Acaciæ, vel Gummi Arabicæ, *Lond. Edin. Dub.* Trochisci Gummosi, *Edin.* Emulsio Acaciæ Arabicæ, vel Emulsio Arabica, *Edin. Dub.*

Dosis, *a* ʒii. *ad* ʒi. Gummi; *a* lb. j. *ad* lb. ij. Emulsionis; *ab* ℈i. *ad* ℈iv. Mucilaginis; *a* ʒii. *ad* ℈i. Trochiscorum.

STIZOLOBIUM PRURIENS. Common Cow-Age or Cow-Itch.

Class and Order, DIADELPHIA DECANDRIA. Nat. Ord. LEGUMINOSÆ.

GEN. CHAR. *Calix* campanulate, two-lipped, upper lip entire, erect, lower trifid, with the middle segment longest; *Vexillum* ascending, wings axe-shaped, lunate at the base, the length of the *carina*; *Anthers* hairy; *Legume* uneven, one-celled with partitions; *Seeds* round, with a crested hilum.

Stizolobium *pruriens*; pods racemose; valves keeled, hairy; peduncles in threes.

S. pruriens, *Persoon, Syn.* ii. p. 298. *Loudon, Encyl.* p. 616.
Dolichos pruriens, *Willd. Sp. Pl.* iii. p. 1041. *Woodville, Med. Bot.* iii. p. 463.

THE pods of this species, as well as *S. urens*, are thickly covered with a dense prickly tomentum, which is the officinal part of the plant, and is used as a vermifuge. Cow-age is native of the East and West Indies, where it grows in great luxuriance, climbing to the summits of the tallest trees; it is a perennial plant, with ternate leaves, and handsome purple flowers. Its pods are imported from the West Indies, and the hairs are scraped off with a knife for use; they are so sharp as to penetrate the skin, when they occasion an intolerable itching; a similar inconvenience is occasioned by the hairs of several species of caterpillar. Introduced into Britain in 1680, but is not an abundant species.—G.

An infusion of the root of the Stizolobium is used by the native practitioners of India in Cholera.* The pods of this plant are covered with stiff brown hairs; these are scraped off and mixed with thick syrup or honey, and prescribed as anthelmintic. This remedy is frequently used in the West Indies, and in general with success, the worms that are voided are said to be always found transfixed with some of the hairs. Much irritation follows the insertion of one of these hairs or setæ into the hand or arm.—J. D. M.

Officinal. Setæ Siliquarum.

Dosis, *a* gr. v. *ad* gr. v. Setarum ex Melle vel Syrupo.

* Ainslie's Materia Indica, i. 92.

ORIGANUM VULGARE. *Marjoram.*

Class and Order, DIDYNAMIA GYMNOSPERMIA. Nat. Ord. LABIATÆ.

GEN. CHAR. *Calix* various; *Corolla* with the upper lip erect, nearly plane, lower one patent, trifid.

Origanum *vulgare;* heads of flowers roundish, panicled, crowded, glabrous; bracteas ovate, longer than the calix; leaves ovate, entire.

O. vulgare, *Lin. Sp. Pl.* 824. *Fl. Brit.* ii. p. 629. *Engl. Bot.* t. 1143. *Woodville, Med. Bot.* iii. p. 451. *Fl. Lond.* ed. 2. v. iii. *Hooker, Br. Fl.* p. 272.

A HARDY perennial of common occurrence in dry hilly situations; stems very erect, much branched at the summit; flowers purple; calix and bracteas frequently of the same hue; in the present species the branches of flowers are very diffuse, but some of the foreign kinds have the heads four-sided, resembling catkins imbricated with bracteas; leaves entire, or slightly indented on the edges. Though retained in the Pharmacopœias, it has no peculiar properties different from the other nearly allied genera in this truly natural family. —G.

The *Origanum vulgare* is considered tonic, emmenagogue, and stimulant. Its odour is similar to thyme, and it yields a considerable portion of essential oil, which possesses its virtue in a concentrated form. The dried plant gives about two and a-half per cent of volatile oil.—J. D. M.

Officinal. Herba.
Officinal preparation. Oleum Volatile Origani Vulgaris.
Dosis, *a* gtt. v. *ad* viii. Olei Volatilis.

ORIGANUM MAJORANA. *Knotted-Marjoram.*

Class and Order, Nat. Ord. Generic Character, see *O. vulgare.*

Origanum *majorana;* spikes roundish, thin, compact, stalked; leaves elliptical, blunt, downy.

O. majorana, *Wild. Sp. Pl.* 137. *Pers. Syn.* ii. p. 129.

A native of Portugal and the warmer parts of Europe, and much in request for culinary purposes; it requires the shelter of a frame in this country, and is usually treated as a tender annual, though commonly of longer duration. It produces its flowers in dense clusters or knots, from whence it acquires its common appellation of knotted marjoram.—G.

The *Origanum majorana* is officinal, but is very rarely used; it enters into the composition of vegetable cephalic snuffs, and is fully more agreeable than the *vulgare*. It is much used as a pot-herb; the dried leaves yield about three per cent of volatile oil.—J. D. M.

Officinal. Herba.

Officinal preparations. Oleum Volatile Origani Majorana. Pulvis Asari Compositus. *Edin. Dub.*

MORUS NIGRA. *Common Mulberry.*

Class and Order, MONŒCIA TETRANDRIA. Nat. Ord. ARTOCARPEÆ.

GEN. CHAR. Male; *Calix* four-parted; *Corolla* wanting.

Female; *Calix* four-leaved; *Corolla* wanting; *Styles* two; *Calyx* berried; *Seed* one.

Morus *nigra;* leaves cordate, ovate, or lobed, unequally toothed, scabrous.

M. nigra, *Lin. Sp. Pl.* 1398. *Woodville, Med. Bot.* ii. p. 353.

THE common or black mulberry has been cultivated in Britain since 1548; it is a native of Italy, but bears the cold of our climate without injury. In England, it regularly ripens its fruit, which is a very rare occurrence in Scotland. It is a tree of very slow growth, and of great longevity; many of those in the neighbourhood of London are supposed to have been planted during the reign of James the First, and are now in full vigour, or scarcely attained their full size. Contrary to other fruits, this becomes larger and finer on the oldest trees, that produced by young trees being comparatively tasteless. The leaves of this and other species are used as food for silk-worms, for which purpose considerable numbers have been of late years planted in the south of Ireland, for the purpose of introducing the growth of silk into that country; the species usually employed is the *M. alba*, or white mulberry, the fruit of which is of a pale-green, almost white, and is of a less acid taste than the common species. The fruit should be used as soon as gathered, as it becomes mouldy in a few hours after being taken from the tree.—G.

The fruit of the mulberry is sweet, subacid, and mucilaginous. It is seldom used in me-

dicine, but is in much request in England for the table. The bark of the tree is acrid and bitter, and has been suggested as a remedy in *tænia*. * The leaves are considered the best food for silk-worms.—J. D. M.

Officinal. Fructus.
Officinal preparation. Syrupus Mori Nigræ, *Lond.*
Dose, *a* ʒij. *ad* ℥ss. Syrupi.

PTEROCARPUS SANTALINUS. Red Saunders Tree.

Class and Order, DIADELPHIA DECANDRIA. Nat. Order, LEGUMINOSÆ.

GEN. CHAR. *Calix* five-toothed; *Legume* falcate, foliaceous, varicose, indehiscent, encompassed by a wing; *Seeds* few or solitary.

Pterocarpus *santalinus*; leaves ternate, roundish, blunt, quite smooth; petals crenate, wavy.
P. santalinus, *Lin. Suppl.* 318. *Woodville, Med. Bot.* iv. p. 254.

THE tree producing the saunders wood is lofty, with alternate branches, and a bark resembling the common alder. The wood is imported in billets. It is very heavy, sinking in water; of a bright garnet-red colour, which deepens on exposure to the air, and aromatic smell; is exceedingly hard, fine-grained, and susceptible of a high polish.—G.

The wood of the *Pterocarpus santalinus* is only useful or interesting as a dye. It is seldom or never used in medicine for its medicinal virtues. It contains a peculiar colouring matter, insoluble in water, soluble in alcohol and some of the weaker acids, to which the name of *Santaline* has been given. It is obtained by acting upon the wood with ammonia, and by precipitating the alkaline solution with muriatic acid. † The *santaline* when thus obtained is in the form of a brownish-red colour. Its alcoholic solution precipitates the metallic salts, and with some forms beautiful pigments.—J. D. M.

Officinal. Lignum.

CETRARIA ISLANDICA. Iceland Moss.

Class and Order, CRYPTOGAMIA ALGÆ. Nat. Ord. LICHENES.

* Richard, Hist. Mat. Med. i. 557.

† Berzelius, Traité de Chimie, vi. 12.

Gen. Char. *Thallus* foliaceous, cartilagineo-membranaceous, ascending and spreading, lobed and laciniated, on each side smooth and naked; *Apothecia* orbicular, obliquely adnate, with the margin of the *thallus*, the lower portion being free, (not united with the *thallus*;) the *Disk* coloured, plano-concave, with a border formed of the *thallus* and inflexed.

Cetraria *Islandica*; thallus erect, tufted, olive-brown, paler on one side, laciniated, channelled, and dentato-ciliate, the fertile lacinia very broad; apothecia brown, appressed, flat, with an elevated border.—*Hooker, Br. Flora*, ii. p. 221.

Lichen Islandicus, *Ach. Syn. Lich.* p. 229. *Woodville, Med. Bot.* t. 265. *Engl. Bot.* t. 1330.

An abundant species, principally confined to northern and alpine regions. It is found in various parts of Scotland, but does not produce fructification except on some of the more elevated mountains. Most of that used in this country is imported from Norway or Iceland, and it is to the natives of those countries an equivalent to bread. It has a bitter unpleasant taste, which is in great part removed by maceration in cold water. It is principally used as an article of diet. It is nutritive and easy of digestion. Other species of this family likewise possess nutritive properties; the *Tripe de Roche, (Gyrophora,)* common to the Arctic regions, was the principal food on which Sir Thomas Franklin and his adventurous associates were compelled to subsist for a considerable time; and it is more than probable that a number of our native lichens would form a wholesome, if not a very palatable, food, as many of them contain large quantities of starch.—G.

Iceland moss has been highly extolled as a cure for phthisis, but its curative power has not been as yet very apparent. It is nutritious, and is a very good substitute for arrow-root, or any other mucilaginous article of diet. Before using it, it ought to be steeped in water, to which a little potass has been added, that the bitter taste which it has may be destroyed. It may be afterwards boiled in milk or cocoa. According to Berzelius, Cetraria contains chlorophylle, 1.67; a bitter extractive matter, 3.0; uncrystallizable sugar, 3.6; gum, 3.7; residuary extractive, 7.0; starchy matter, 44.6; bilichinates of potass and lime, 1.9; amylaceous fibrine, 36.2. *—J. D. M.

Officinal preparation. Decoctum Cetrariæ Islandicæ.

ROCCELLA tinctoria. Dyer's Roccella or Archill.

Class and Order, Cryptogamia Algæ. Nat. Order, Lichenes.

* Traité de Chimie, vi. 251, and v. 210.

Gen. Char. *Thallus* coriaceo-cartilaginous, rounded or plane, branched or laciniated; *Apothecia* orbicular, adnate with the thallus; the *Disk* coloured, plano-convex, with a *border*, at length thickened and elevated, formed of the *thallus*, and covering a sublentiform, black, compact, purulent powder, concealed within the substance of the thallus.

Roccella *tinctoria;* thallus suffructicose, rounded, branched, somewhat erect, grayish brown, bearing powdery warts; apothecia flat, almost black and pruinose, with a scarcely prominent border.—*Hooker, Br. Fl.* ii. p. 221.

Lichen roccella, *Lin. Sp. Pl.* 1622. *Engl. Bot.* t. 211.

Archill is found on the maritime rocks in the south and west of England, but does not appear to be known in any other part of Britain. That used in dyeing is principally procured from the Canary Islands, and is imported in immense quantities into this country; it is usually in small tufts, and often mixed with other species of sea-weed.—G.

Various distinct principles have been discovered in the *Roccella*. Robiquet found a crystalline matter capable of imparting colour to bodies when in contact with ammonia; to this he has given the name of *Orcine*. Heiren has discovered a number of principles, but as they are not practically important, and as the details are very minute, and consequently long, I shall merely enumerate them: *Erythrine;* bitter of *erythrine;* a yellow colouring matter; a deep-red colouring matter; and the purplish red colouring principle of the lichen.

Berzelius gives the full detail of these experiments in the sixth volume of the Traité de Chimie, p. 19 to 28.—J. D. M.

PISTACIA lentiscus. Mastich-Tree.

Class and Order, Diœcia Pentandria. Nat. Ord. Anacardiaceæ.

Gen. Char. Male: *Calix* five-cleft; *Corolla* wanting.

Female: *Calix* three-cleft; *Corolla* wanting; *Styles* five; *Drupe* one-seeded.

Pistacia *lentiscus;* leaves abruptly pinnate; leaflets lanceolate, about eight pairs.

P. lentiscus, *Lin. Sp. Pl.* 1455. *Woodville, Med. Bot.* iii. p. 412. *Bot. Mag.* t. 1967.

This species is a native of the south of Europe, and was cultivated in Britain in 1664. It is a low tree or shrub, seldom exceeding ten or twelve feet in height, much branched at the summit; the leaves are pinnate, composed of six or eight pairs of leaflets, placed on

winged foot-stalks; flowers growing three or four spikes together, from the axilla of the leaves, and sometimes are terminal; as in the former species, the flowers are inconspicuous.

Mastich is obtained from incisions made in the bark, from whence it exudes, and is received on cloths, to keep it free from impurities; when hardened, it is of a light yellow colour, brittle and hard, and usually is imported in small round fragments.—G.

Mastich is the concrete resinous juice of the *Pistacia lentiscus;* it is much used by the Turks and other eastern nations as a masticatory (hence its name;) but in Europe it is chiefly used for making varnishes and cements. It enters into the composition of "the dinner pill." It consists of two resins, the one soluble in anhydrous, the other in diluted, alcohol. Some chemists have given the name of *Masticine* to that portion which is insoluble in diluted spirit.—J. D. M.

Officinal. Succus Resinosus.

PISTACIA TEREBINTHUS. *Cypress Turpentine-Tree.*

Class, Order, Natural Order and Generic Character, see *P. lentiscus.*

Pistacia *terebinthus;* leaves pinnate, with an odd one; leaflets five or seven, ovate-lanceolate, rounded at the base, acute mucronate.

P. terebinthus, *Lin. Sp. Pl.* 1455. *Woodville*, iii. p. 415.

A NATIVE of Greece, the south of Europe, and north of Africa, but thrives well in this country, where it has been cultivated since 1556. The tree seldom exceeds twenty feet in height, has pinnate deciduous leaves, and produces its spikes of inconspicuous flowers at the end of the wood formed the year preceding. On being wounded, the turpentine exudes, and when hardened, forms the drug cypress turpentine.—G.

The Chian or cypress turpentine is the produce of the *Pistacia terebinthus.* It does not differ from the other turpentines, but it is more fragrant, much higher priced, and frequently adulterated.—J. D. M.

Officinal. Succus Resinosus.

ORNUS Europæa. European Ornus or Manna-Tree.

Class and Order, Diandria Monogynia. Nat. Ord. Oleaceæ.

Gen. Char. *Calix* four-parted; *Corolla* of four petals; *Fruit* a winged *Samara* of two cells.

Ornus *Europæa;* leaves lanceolate, attenuated, stalked, toothed. *Persoon, Synopsis* i. p. 9. Fraxinus ornus, *Willd. Sp. Pl.* iv. 1102. *Fl. Græc.* i. iv. t. 4. *Woodville, Med. Bot.* i. p. 105.

This plant with one or two others were separated from the genus Fraxinus by Persoon, and form that of Ornus. They differ from the true ash, in having a calix and corolla, of which that tribe are destitute.

The present species is common in Greece and the south of Europe; it is a low tree, in aspect resembling the common ash, but has smaller foliage, which are on long grooved foot-stalks, placed opposite, composed of several leaflets, and a terminal one; the flowers are in loose panicles, white, and situated at the extremities of the branches; capsules pendulous, of a similar form to those of the ash, vulgarly called keys.

Manna is the concrete juice of the tree, in the trunk of which an incision is made, and something introduced to convey the juice to the air, upon exposure to which it hardens. It is produced by a variety of other trees, but this is cultivated for the express purpose. The finest kinds are in the form of small tubes, occasioned by pieces of straw or stick being introduced into the parts from whence the juice exudes, which, flowing upon these, hardens, and is more valuable than what is in mass, from its containing less impurities.—G.

The concrete juice of the *Ornus Europæa* is called Manna. It exudes spontaneously from the tree, and is also obtained by making incisions. The best is imported to this country from Sicily and Calabria, and is produced without incisions having been previously made. It is frequently adulterated by the admixture of honey and sugar; and an artificial manna is prepared by mixing honey and sugar with a small quantity of scammony. It is a gentle and pleasant laxative, but its action is so mild that it is generally combined with some more powerful cathartic, such as senna or rhubarb. A variety of sugar, to which the name of *Mannite* has been given, was discovered by Proust in the manna obtained from the *Ornus*. The same variety of sugar has been found in many other plants, such as onions, beet, celery, asparagus, the larch, &c. * It is procured by acting on manna with alcohol, and by evaporating the alcoholic solution; it is sweet, white, and crystalline, and forms a syrup with water, which does not ferment. Chemists take advantage of this property, in separating it from other saccharine matters with which it is combined in the juice of many vegetables

* Berzelius, Traité de Chimie, v. 253.

which contain it. Acids and heat affect *Mannite* nearly in the same way as common cane sugar.—J. D. M.

Officinal. Succus Concretus.
Officinal preparation. Confectio Sennæ, *Lond. Edin. Dub.*
Dosis, *a* ʒiii. *ad* ℥i. Succi Concreti.

TAMARINDUS INDICA. Tamarind-Tree.

Class and Order, MONODELPHIA TRIANDRIA. Nat. Ord. LEGUMINOSÆ.

GEN. CHAR. *Petals* three, ascending, three fertile filaments longer than the others; *Legumen* one to three-celled, pulpy within.

Tamarindus *Indica, Willd. Sp. Pl.* iii. p. 577. *Woodville, Med. Bot.* iii. p. 454.

THE tamarind forms a large spreading tree. Its leaves are abruptly pinnate, composed of sixteen or eighteen pairs of sessile leaflets; calix pale straw-coloured, deciduous; flowers full yellow, elegantly veined with deep red. These are succeeded by pods of a roundish compressed form, from three to six or eight inches in length: seeds bright mahogany-coloured, flat, angular, and shining, lodged in the pulpy lining of the pods. This, which is the only known species, is common to both Indies, and also Arabia and Egypt. The officinal preparation is merely the pulp preserved by the addition of syrup. That obtained from the West Indies is to be preferred.—G.

The fruit of the tamarind preserved with sugar is useful in febrile diseases as a gentle laxative. Hot water poured on it acquires a sweet, subacid, agreeable taste, and is a very palatable drink; it allays thirst, and is cooling in its effects. The pulp, according to Vauquelin, is composed of 12.5 sugar; 4.7 gum; 6.2 pectic acid; 0.4 malic acid; 9.4 citric acid; 1.5 tartaric acid; 3.2 supertartrate of potass; 31.2 of vegetable fibre; 36.5 of water. —J. D. M.

Officinal. Fructus Conservatus.
Dosis, *a* ʒii. *ad* ℥ss.

FICUS CARICA. *Common Fig-Tree.*

Class and Order, POLYGAMIA DIŒCIA. Nat. Ord. ARTOCARPEÆ.

GEN. CHAR. Common receptacle turbinate, closed, fleshy.

Female: *Calix* five-parted; *Corolla* wanting; *Ovary* one; *Seed* one.

Male: *Calix* three-parted; *Corolla* wanting; *Stamens* three.

Ficus *carica;* leaves cordate, three or five-lobed, repand-toothed, lobes blunt, rough above, downy beneath.

F. carica, *Lin. Sp. Pl.* 1513. *Woodville, Med. Bot.* ii. p. 354.

THE species are either trees or shrubs abounding in a milky juice. In Britain, the fig rarely ripens its fruit in the open ground, though it grows luxuriantly and produces quantities of fruit, which fall off without coming to perfection. The ripe fruit is exceedingly sweet and luscious, but is not held in much esteem in this country; the dried fruit is imported from Turkey and the Levant, particularly the Faroe Isles. This is an extensive genus, comprehending seventy-four known species, besides varieties, the whole of which are natives of warm climates.

In the natural family to which this genus belongs are found the bread-fruit, *Artocarpus incisa*, the jack, and the mulberry, and, as remarked by Professor Lindley, "are a curious instance of wholesome or harmless plants in an order containing the most deadly poison in the world,—the *Upas* of Java." He adds, "the juice, however, of even those which have wholesome fruit is acrid and suspicious; and in a species of fig, *Ficus toxicaria*, is absolutely venomous." *F. indica* is a tree of immense size, spreading very wide, the branches ash-coloured, and throwing down roots into the soil. One is mentioned by Marsden growing near Memgee, twenty miles west of Patna in Bengal, which was in diameter 370 feet, the circumference of the shadow at noon was 1116 feet, and there were fifty or sixty stems; it was called the Priest's tree, and was held in great veneration by the Gentoos; it is known in India as the Banyan Tree. *F. elastica*, with some other plants, produce the well-known substance, India-rubber.—G.

Figs are more properly articles of food than of materia medica. They consist almost entirely of sugar and mucilage, and are very good demulcents. They act as gentle laxatives, and are useful in habitual constipation. A roasted fig is a popular remedy in gum bile, and it seems to promote suppuration with great rapidity.—J. D. M.

Officinal. Fructus Exsiccatus.

Conium maculatum.

CONIUM MACULATUM. Hemlock.

Class and Order, PENTANDRIA DIGYNIA. Nat. Ord. UMBELLIFERÆ.

GEN. CHAR. *Calix* obsolete; *Petals* obcordate, inflexed at the points; *Fruit* laterally compressed, ovate; *Carpels* with five prominent, waved, or crenated equal *ridges*, of which the lateral ones are marginal; *Interstices* with many *striæ*, without *vittæ*; *Seed* with a narrow groove in front; *Universal involucre* of *few leaves*; partial of *three leaves on one side*.

Conium *maculatum*; stem glabrous, spotted; leaves tripinnate; leaflets lanceolate, pinnatifid, with acute and often-cut segments.

C. maculatum, *Lin. Sp. Pl.* 349. *Fl. Brit.* 302. *Woodville, Med. Bot.* t. 22. *Engl. Bot.* 1191. *Fl. Lond.* ed. 2, ii. *Hooker, Br. Fl.* p. 134.

ROOT biennial, fusiform, whitish; stems from two to five feet high, much branched at the top, channelled, and spotted with red purple; root leaves large, much divided; cauline ones smaller, finer cut. This plant closely resembles several others of our native umbelliferæ, but is readily distinguished by its spotted, smooth, and shining stems, also by its powerfully fetid odour when bruised. Its root is large, often from a foot to eighteen inches in length, and from an inch to an inch and a-half in diameter, and has much the appearance of a parsnep. When boiled, the roots appear destitute of any deleterious quality, and I have repeatedly eaten them; their taste resembles that of parsnep, but is less sweet; to me their taste has nothing peculiar to recommend them, but at the same time it is not unpleasant; nor do they produce any injurious effects.

The same method should be adopted in drying the hemlock for medicinal purposes, as mentioned in describing the Digitalis. Only one other species is mentioned, *C. Africanum*, a native of the Cape of Good Hope, which is reported to be possessed of similar properties with the British species.—G.

Hemlock was well known to the ancients, but had fallen into disuse; it was re-introduced by Dr Stoerk in the middle of the eighteenth century, and was said by him to be successful in the removal of scirrhous tumours; it alleviates the pain in open cancer, and can be employed both internally and externally. In its effects it resembles opium more than any of the other umbelliferous narcotics; and in constitutions where that drug is inadmissible, it is a valuable substitute. The leaves are the officinal part, and are more active than the root, which is by some authors said to be nearly inert, but this opinion must

have arisen from less active plants having been mistaken for Conium, or from the root having been dug up at an improper time. Orfila found that one pound gathered in June killed a dog in six hours, while three pounds gathered in April produced no effect. * In man, the effects from an overdose are similar to what an overdose of opium causes. Dr Christison quotes from Corvisart's Journal the following cases of poisoning with this plant: "M. ——, a French army surgeon, has described a fatal case of poisoning with hemlock, which closely resembled poisoning with opium. The subject of it, a soldier, had partaken, along with several comrades, of a soup containing hemlock leaves, and appeared to them to drop asleep not long after, while they were conversing. In the course of an hour and a-half, they became alarmed on being all taken ill with giddiness and headach, and the surgeon of the regiment was sent for. He found the soldier, who had fallen asleep, in a state of insensibility, from which, however, he could be roused for a few moments. His countenance was bloated, the pulse only 30, and the extremities cold. The insensibility became rapidly deeper and deeper till he died, three hours after taking the soup. His companions recovered." † The extreme fluidity of the blood is a remarkable circumstance in cases of poisoning with Conium. In the case above quoted, "on opening the head a quantity of blood flowed out, which twice filled an ordinary chamber-pot." ‡ Dr Christison found the blood remarkably fluid in a case which he examined; and he mentions, that Dr Coindet of Geneva found that a small quantity of the infusion of Conium prevented blood from coagulating even when removed from the body. Dr A. T. Thomson has given the name of Conia to an etherial extract, which he considers the active principle of the plant. § Brandes has given the name of *Conicine* to a principle which he procures by the action of magnesia on an alcoholic extract, and Giesecke and Geiger have given the same name to a volatile alkaline substance procured by distillation with lime or potass. Geiger procures what he considers the active principle, in the form of an oleaginous fluid of a yellowish-brown colour, and of an extremely acrid, bitter taste, with an odour somewhat resembling tobacco. ‖ It is soluble in water, and combines with and neutralizes the acids. It is extremely poisonous.

I was led, by the results of some experiments which I made on the empyreumatic oils of Digitalis and Datura, which are detailed at pages 3, 4, 5, and 12 of this work, and in the Edinburgh Medical and Surgical Journal for April 1833, to try the empyreumatic oil of Conium, and as the results of these experiments coincide with those which I had previously made, and as they confirm Geiger's experiments with regard to the volatile Conicine, I shall detail them as they appeared in the Medical Journal. I may state, that the empyreumatic oil was procured in the same way as has been already mentioned under the head of Digitalis.

"The watery fluid which passes over with the oil possesses, in a still more remarkable degree than that of the Digitalis, the property of changing colour. When sulphuric acid is added in sufficient quantity to neutralize exactly the carbonate of ammonia contained in it, the

* Orfila, Toxicologie Generale, ii. 303.

† Christison on Poisons, 734.

‡ Ibid. 735.

§ Thomson's El. Mat. Med. and Therap. i. 572.

‖ Berzelius, Traité de Chimie, vi. 254.

solution changes from brown, first to green, then to reddish brown, and lastly to a dull red. If muriatic acid be added to water containing one-thirtieth part of this fluid, a distinct red shade is produced, though the solution was previously colourless; if the liquid after the addition of the acid be boiled, the colour deepens, and a vermilion precipitate falls, leaving the supernatant liquid of a dark orange. Nitric acid changes the colour of a dilute solution from bright yellow to brown. If heat be applied, the colour changes to dark yellow, then to red, afterwards to purple, and lastly to black, after which a dark precipitate falls, and the solution becomes of its original colour. Sulphuric acid occasions somewhat similar changes."

"*Exp.* 1. Six drachms of the acidulated washings of the oil were given to a rabbit; in ten minutes, it began to be affected, dragging its hind-legs, and using them more like a cat or dog than a rabbit; in twenty minutes, it appeared fast asleep, but could easily be roused; in half an hour, the muscles of the neck and back had lost all power, and it remained in whatever position it was placed. It died in forty-five minutes; the heart was acting very feebly, and continued to contract for about three minutes.

"The six drachms were equivalent to about twenty-five grains of the oil.

"*Exp.* 2. The acidulated washings of twenty grains were given to a rabbit, and caused death in less than an hour. The heart contracted for nearly ten minutes after death.

"The empyreumatic oil of *Conium* seems a more purely narcotic poison than that of either tobacco or *Hyoscyamus*, and certainly much more so than that of *Digitalis* or *Stramonium*, which possess exciting properties." *

I have since tried the distillation of the extract with caustic potass, and I can confirm the statement of Geiger from the results which I obtained.

The powdered leaves are the most certain of the preparations of Conium, but they require to be carefully prepared and preserved, and to be prescribed with the utmost caution. The extract is a very convenient preparation, but its strength is uncertain, unless when prepared in vacuo from plants collected at the proper season, which is when the plant is flowering. The Dublin College order the unripe seeds, but with what view is not very obvious. In hooping-cough and phthisis, Conium has been found useful, and in rheumatism complicated with paralysis, it has succeeded in effecting several cures. † In conjunction with calomel, it has proved beneficial in various inflammatory diseases where opium could not with propriety have been given.—J. D. M.

Officinal. Folia et Semina.

Officinal preparation. Extractum Conii Maculati, *Lond. Edin. Dub.* Pulvis Foliorum, *Lond. Edin. Dub.* Tinctura Conii Maculati, *Edin.*

Dosis, *a* gr. ij. *ad* gr. xv. Pulveris Foliorum; *a* gr. i. *ad* gr. vii. Extracti; *a* ʒss. *ad* ʒiss. Tincturæ.

References to Plate 37.

Fig. 1, Calix; Fig. 2, Flower; Fig. 3, Seed magnified.

* Observations on the Chemical and Physiological properties of the Empyreumatic Oils of Foxglove, Henbane, and Tobacco. By John Davie Morries, M. D.—Med. Journ. No. 115, p. 377.

† Thomson's El. Mat. Med. and Therap. i. 574.

MELALEUCA Leucadendron. Cajaputi Tree.

Class and Order, Polyadelphia Polyandria. Nat. Ord. Myrtaceæ.

Gen. Char. *Stamens* long, in five bundles, opposite the petals; *Anthers* incumbent; *Capsule* three-celled, many-seeded, connate, and included in the thickened tube of the calix, which is grown to the branch.

Melaleuca *Leucadendron;* leaves alternate, lanceolate, acuminate, oblique, five-nerved; branches and petioles smooth.

M. Leucadendron, *Rumphius, Herbarium Amboinense*, ii. t. 16.
M. cajaputi, *Trans. Med. Bot. Soc.* n. 1–27. t. 1.

It is probable that more than one species of Melaleuca yield the oil known in commerce as Cajeput oil. The species above described is generally esteemed as the officinal plant; it is a native of the East Indies and islands in the Indian ocean; it forms an upright tree of moderate size, with longish pendant branches and leaves; the bark is whitish ash-colour; spikes of flowers are terminal, with a leaf bud at the extremity, which before the flowers are all developed expands into a leafy twig, by which flowers appear to grow from the centre of the branch.—G.

Cajeput oil is obtained from the leaves of the Melaleuca by distillation; it is of a bright-green colour, and a pungent aromatic camphorous taste; its green colour was supposed to arise from the presence of copper, as it is brought to Europe in copper flasks; but Mr Brande could not detect a trace of that metal. According to Leverköhn, the oil consists of two distinct oils, one of which is colourless, and of much less specific gravity than the mixed oils, the other is green and is heavier. The colourless oil constitutes seven-eighths of the whole, * and this may have given rise to the statement, that the oil when pure is colourless. As an external application, Cajeput oil is useful in chronic rheumatism, in weakness of the joints arising from old dislocations or sprains, and in indolent tumours. It is used internally like the other essential oils, and is said to be more powerfully anti-spasmodic. In *Cholera spasmodica* it was at first considered a specific, but it afterwards fell into complete neglect.—J. D. M.

Officinal. Folia.
Officinal preparation. Oleum Volatile.
Dosis, *a* gtt. iv. *ad* viii. Olei Volatilis.

* Berzelius, Traité de Chimie, v. 403.

AMYRIS GILEADENSIS. Balsam of Gilead-Tree.

Class and Order, OCTANDRIA MONOGYNIA. Nat. Ord. AMYRIDEÆ.

GEN. CHAR. *Calix* four-toothed; *Petals* four, oblong, spreading; *Stigma* capitate; *Berry* drupaceous, one-seeded.

Amyris *Gileadensis;* leaves ternate; leaflets entire; peduncles one-flowered, lateral.

A. Gileadensis, *Willd. Sp. Pl.* ii. p. 333. *Woodville, Med. Bot.* iii. t. 192.
Amyris opobalsamum, *Forsk. Egypt.* p. 79.
Balsamodendron Gileadense, *Decand. Prod.* t. 2, p. 76.

THE tree which yields the Balsam of Gilead is an evergreen, twelve feet or more in height, with a thick stunted stem; leaves growing in threes; branches purplish, somewhat striated; flowers ternate, white, succeeded by a purplish brown berry, containing a smooth nut, flattened on one side and furrowed. This species is supposed to produce the celebrated Balm of Gilead, which is among the most ancient of medicinal drugs. It is a native of Arabia, but the trees are scarce, and the produce of balsam so very trifling that its price is exhorbitant, and renders it always subject to adulteration.—G.

Balm of Gilead is hardly ever procured in a state of purity in this country; as it does not possess any virtues which the other balsams do not, its scarcity is not of much importance. It has been used from the earliest periods; it is spoken of in Scripture; and is still in high repute in the East. It is much more aromatic than any of the other balsams, and in this lies its only superiority. Trommsdorff has analyzed this balsam, and has found that it consists of 3.0 parts of volatile oil; 64 of hard resin; 4 of soft resin; and 0.4 of bitter colouring matter. The volatile oil is colourless, fragrant, and warm, almost acrid to the taste; it is insoluble in the alkalies, soluble in strong acetic acid, in ether, the fixed oils; with nitric acid it forms a resinous matter having the smell of musk. Sulphuric acid dissolves and decomposes it, and a blood-red solution results. The hard resin is sparingly soluble in cold alcohol or ether, but is very easily dissolved by these liquids when heat is applied. Concentrated nitric acid acts violently upon it, and oxalic acid and a yellow bitter matter result. The soft resin is insoluble in alcohol, ether or water. It is soluble in the fixed oils, and it is rendered hard and friable by nitric acid.—J. D. M.

Officinal. Succus Resinosus.
Dosis, *a* ℈i. *ad* ʒi. ter indies.

MYROXYLON PERUIFERUM. Balsam of Peru-Tree.

Class and Order, DECANDRIA MONOGYNIA, Nat. Ord. LEGUMINOSÆ.

GEN. CHAR. *Calix* cup-shaped, five-toothed; *Petals* five, the superior one larger than the others; *Legume* with one seed.

Myroxylon *Peruiferum;* leaves pinnate; leaflets pointed; claw of the larger petal twice the length of the calix.

M. Peruiferum, *Willd. Sp. Pl.* ii. p. 546. *Lambert, Illustration of the genus Cinchona*, p. 92.
Toluiferum Balsamum, *Lin. Sp. Pl.* 549. *Woodville, Med. Bot.* iii. p. 526.

THE tree which produces the Balsams of Peru and Tolu is described as growing in Mexico and Peru; is of moderate size; the stem and branches covered with a coarse heavy bark, of a pale straw colour within, and filled with a fragrant resin that pervades every part of the tree.

"The balsam of quinquino (or Peru) is procured by incision at the beginning of spring, when the showers are gentle, frequent and short; it is collected in bottles, when it keeps liquid some years, in which state it is called white liquid balsam. But when the Indians deposit this liquid in mats or calabashes, which is commonly done in Carthagena, and in the mountains of Tolu, after some time it condenses, and hardens into resin, and is then denominated dry white balsam, or balsam of Tolu, by which name it is known in the druggist's shops."—G.—*Ruiz et Pavon, Flora Peruviana.*

Balsam of Tolu has a fragrant aromatic smell, and a warm agreeable taste; it acts as an expectorant, and is very often added to pectoral mixtures to cover the taste of less agreeable remedies. It contains volatile oil, but in such small quantity that it cannot be obtained in an uncombined state by distillation. Dr Duncan proposes that the syrup of Tolu should be prepared from the distilled water, instead of the tincture. Like the other balsams, it is composed of resin, benzoic acid, and, as already stated, volatile oil.

The balsam of Peru is somewhat different in chemical constitution from that of Tolu. According to Stolze, it contains 69.0 parts of volatile oil; 20.7 of resin soluble in alcohol; 2.4 of resin sparingly soluble in alcohol; 6.4 of benzoic acid; 0.6 of extractive matter; 0.9 water. * The volatile oil does not rise in distillation with water, nor by dry distil-

* Richard, Hist. Nat. Med. ii. 510.

lation; it is much less volatile than other essential oils, and is obtained by a very tedious process. For farther information, see Berzelius, Traité de Chimie, v. 361.—J. D. M.

Officinal. Succus Resinosus.

Officinal preparation. Tinctura Toluiferæ Balsami. *Edin. Dub.* Syrupus Toluiferæ Balsami. *Lond. Dub.*

Dosis, *a* gr. xv. *ad* ℈ij. Balsami; *a* ʒi. *ad* ʒii. Tincturæ; *a* ʒiii. *ad* ʒvi. Syrupi.

STYRAX OFFICINALE. *Officinal Storax-Tree.*

Class and Order, DECANDRIA MONOGYNIA, Nat. Ord. STYRACEÆ.

GEN. CHAR. *Calix* inferior; *Corolla* funnel-shaped, *Drupe* two-seeded.

Styrax *officinale*, leaves ovate, entire, beneath villous, racemes simple, few-flowered, shorter than the leaf.

S. officinale, *Lin. Sp. Pl.* 635. *Woodville, Med. Bot.* ii. p. 197.

THIS species is a native of Italy, and forms a low tree, with slender branches; leaves ovate, entire, hoary beneath; flowers white, growing in clusters from the sides, and terminating the young branches; fruit a juiceless globular drupe, containing two or three angular nuts. The drug storax exudes from incisions made in the bark.—G.

The resinosus concrete juice of the *Styrax officinale* is sold by the apothecaries, chiefly for the purposes of fumigation; it is used in the service of the Catholic church, and its perfume while burning is very agreeable. Storax contains benzoic acid, and an essential oil which cannot be separated by distillation.* It is usually imported in bladders, and is frequently adulterated with benzoin, balsam of Peru, and saw-dust; it is very rarely employed in medicine.—J. D. M.

Officinal. Succus Resinosus.

Officinal preparation. Pilulæ e Styrace. *Dub.*

Dosis, *a* gr. x. *ad* ʒss. Storacis ipsius.

* Berzelius, Traité de Chimie, v. 552.

STYRAX BENZOIN. *Benzoin Storax, or Benjamin-Tree.*

Class and Order, Nat. Ord. and Generic Character, see *S. officinalis.* p. 191.

Styrax *benzoin*; leaves ovate, pointed, entire, beneath downy; flowers axillary.

S. benzoin, *Dryander, in Phil. Trans.* lxxvii. p. 308 t. 18. *Woodville, Med. Bot.* ii. p. 200.

A native of Sumatra, forming a large tree, with long entire alternate leaves; flowers in straggling clusters, unilateral, of a dull white colour. The officinal preparation is obtained from the trees by incision in the bark, and the exudation allowed to harden by exposure to the air; it is then removed with a knife; it is imported in large masses; that which is the whitest, free from impurities, and breaking readily in the hand, is to be preferred; it is commonly mixed with chips, parings of the tree, and other extraneous substances.—G.

Benzoin occurs in masses of an amygdaloid form, of a pale brownish red colour, streaked with whiter and darker portions; it was formerly used as an expectorant, but has now fallen into disuse. It is a good deal employed as a fumigatory, and enters into the composition of Pastilles. The smell while burning slowly and without flame is very agreeable, but from the quantity of benzoic acid which is formed, it causes considerable irritation in the nose, eyes, and larynx, if allowed to accumulate in a confined apartment. Benzoin consists of resin, acid, and extractive matter; it contains about eighteen per cent. of acid, which may be separated by simple sublimation, but which is generally obtained by the action of an alkali, with which it combines, and from which it is separated by the action of a stronger acid. Benzoic acid is procured in the form of small elongated prisms, having a satiny lustre, and a brilliant whiteness; its taste is warm, acrid and sharp; it is when pure inodorous; the odour which it gives out when subliming depends on the presence of volatile oil. It combines with the alkaline bases, and forms crystalline salts.

The balsams all contain benzoic acid, and the usual definition of a balsam is, resin combined with benzoic acid and volatile oil. The Tonka (or *Tonquin*) bean also contains benzoic acid.—J. D. M.

Officinal. Succus Resinosus.

Officinal preparations. Acidum Benzoicum, *Lond. Edin. Dub.* Tinct. Benzoini composita. *Lond. Edin. Dub.*

CITRUS Aurantium. Seville Orange.

Class and Order, Polyadelphia Polyandria. Nat. Ord. Myrtaceæ.

Gen. Char. *Calix* five-parted; *Petals* five, oblong; *Stamens* twenty, the filaments variously divided; *Berry* nine-celled.

Citrus *Aurantium*; petioles somewhat winged; leaves ovate, oblong, acute; anthers twenty; fruit round, sweet, or bitter.

C. Aurantium, *Lin. Sp. Pl.* 1100. *Woodville, Med. Bot.* iii. p. 496.

Oranges are imported into Britain from Spain and Portugal, and are extensively cultivated in Italy and the islands in the Mediterranean. Though sufficiently hardy to endure the winter in the southern parts of this island, the orange tree is always liable to be destroyed by frost, and but rarely produces fruit, except in a few favourable situations on the south coast of England. Cultivated in the conservatory, they form low trees of a handsome form, with bright shining foliage, and are seldom to be seen without abundance of flowers and young fruit. These, to be brought to perfection, require the same attention as the peach or nectarine.

The trees, which rarely exceed eight or ten feet in height with us, are much branched, and frequently furnished with spines on the younger branches; leaves evergreen, of a deep shining colour, placed alternately, elliptical, with winged foot-stalks; flowers large, fragrant, fleshy, growing from the smaller branches; stamens small, about twenty; fruit a large pulpy globular berry, divided into nine compartments or cells, each of which contains from two to four seeds.

There are two varieties of this species, the sweet or China orange, and the bitter or Seville orange. The rind is used for the purpose of candying by the confectioner, and enters largely into the composition of most tonic mixtures. In its ripe state it is one of the most grateful and valuable of fruits; and, like other fruit trees that have been long under cultivation, is subject to considerable variation in the colour, form, and flavour of its fruit. Some foreign authors mention nearly 100 sorts of orange, but the specific differences are so obscurely pointed out that it is probable the larger part are mere seminal varieties. Loudon describes fourteen species of the genus.—G.

The pulp of the orange contains a sweet subacid juice, which is grateful and cooling, and which is often prescribed in febrile and inflammatory diseases. The rind contains a fragrant essential oil, possessing stimulant and carminative properties, and a bitter principle, which is powerfully tonic. The flowers yield an essential oil, which is highly valued as a perfume, and which at one time was extolled as a cure for epilepsy and other convulsive diseases. The distilled water of the flowers possesses calmative virtues, and is sometimes

used instead of opium and its preparations. The acidity of the orange depends on the citric acid which it contains. The rind of the bitter orange is preserved by the confectioner in various forms. When boiled with sugar and dried, it is sold under the name of candied orange peel; when formed into a sort of jelly it is called *Marmalade*, and is in this state used for imparting flavour to various dishes, and as a preserve for the tea or breakfast-table. Orange peel, when simply dried, is an excellent tonic, and enters into the composition of many of our officinal bitters. Lebreton discovered a crystalline bitter principle in the unripe fruit, to which he gave the name of *Hesperidine*.—J. D. M.

Officinal. Fructus et Flores.

Officinal preparations. Cortex exterior Fructus Citri Aurantii, *Lond. Edin. Dub.* Tinctura Aurantii, *Lond. Dub.* Conserva Citri Aurantii, *Lond. Edin. Dub.* Syrupus Citri Aurantii, *Lond. Edin. Dub.* Infusum Aurantii Comp. *Lond.* Aqua Citri Aurantii, *Edin.*

Dosis, *a* ℈i. *ad* ʒi. Corticis; *a* ʒi. *ad* ℥ss. Syrupi et Conservæ; *ab* ℥i. *ad* ℥iii. Aquæ et Infusi Compositi; *a* ʒi. *ad* ʒiii. Tincturæ.

CITRUS LIMONUM. Lemon.

Class and Order, Nat. Ord. and Generic Character, see *C. Aurantium.*

Citrus *Limonum;* leaf-stalks slightly winged; leaves oblong, acute, toothed; stamens thirty-five; fruit oblong, with a thin rind, and very acid pulp.

C. medica, *Lin. Sp. Pl.* 1100. *Woodville, Med. Bot.* iii. p. 500.

THE lemon greatly resembles the orange-tree, but has larger leaves, the foot-stalks of which are slightly winged; flowers white, or often with a faint blush of red; fruit oblong, pale-yellow, with a nipple-like apex. This elegant tree, in favourable situations, will bear the severity of our winters in the open air, but rarely ripens its fruit with us, unless protected from the cold.

The lime greatly resembles the lemon, but is smaller in all its parts; the fruit when perfectly ripe has a sweetish pulp, but in its unripe state is more acid than the lemon. It rarely acquires more than six or eight feet in height, with occasionally thorns on its branches; the fruit is about an inch and a-half in diameter, nearly round, with similar protuberances as the lemon; it is smooth, of a greenish yellow-colour, and has a very fragrant rind.

In the south of England, this species, as well as the citron and orange, have long been cultivated; "and some of the trees now standing have withstood the winter in the open air upwards of a century, and the fruit is as large and fine as any from Portugal."—*Loudon.*—G.

The juice of the lemon is more acid than that of the orange, and is much more frequently employed in medicine. In union with the carbonate of potass or soda, it is commonly prescribed as a cooling saline effervescent in febrile diseases. The rind contains a large proportion of fragrant volatile oil, which is used as a perfume, and for giving the lemon flavour to various articles, such as lemonade, barley sugar, &c. It is affected by chlorine nearly in the same way as oil of turpentine. When kept for a length of time, it deposits crystals of stearoptine. According to Berzelius, lemon juice is composed of water, 97.5; citric acid, 1.77; malic acid, gum, extractive, 0.77. Citric acid is thus prepared: The lemon juice is saturated by carbonate of lime, sulphuric acid is then added, by which the lime is thrown down in the form of sulphate, and the citric acid is set at liberty. Thirty-nine parts of sulphuric acid, diluted with five or six times their bulk of water, will decompose eighty-six parts of citrate of lime. To obtain this acid perfectly free, the sulphuric must be dissolved in distilled water, then boiled with litharge, in the proportion of two parts of litharge for every twenty-five of the acid. The lead combines with the sulphuric acid, an insoluble sulphate is formed, and the liquid is freed from any excess of lead by sulphuretted hydrogen. Citric acid combines with earthy alkaline and metallic bases; its salts are called citrates. It is composed according to Berzelius, of

Hydrogen, - -	3.800
Oxygen, - - -	54.891
Carbon, - - -	41.309.—J. D. M.

Officinal. Fructus.

Officinal preparations. Acidum Citricum, *Lond. Dub.* Syrupus Limonum, *Lond. Edin.* Oleum Volatile, *Lond. Edin. Dub.*

Dosis, *a* gr. xx. *ad* xxx. Acidi Citrici, c. Saccharo; *a* gtt. v. *ad* gtt. viii. Olei Volatilis.

PASTINACA Opoponax. *Rough Parsnep, or Opoponax.*

Class and Order, Pentandria Digynia. Nat. Ord. Umbelliferæ.

Gen. Char. *Calix* nearly obsolete; *Petals* roundish, entire, involute with a sharp point; *Fruit* much compressed dorsally, with a broad flat border; *Carpels* with very slender *ridges*, the three intermediate ones equidistant, the two lateral ones remote, contiguous to the border; *Interstices* with single evident *vittæ*; *Seeds* flat. Universal and partial involucres of few leaves.

Pastinaca *Opoponax*; leaves pinnate, leaflets unequal at the base, scabrous.

P. Opoponax, *Lin. Sp. Pl.* 376. *Woodville, Med. Bot.* ii. p. 309. *Fl Græc.* iii. t. 288.

A hardy plant, which bears the rigour of winter in the south of Britain; it is a native of

the south of Europe, the Levant, and neighbouring shores; it has a thick fusiform root, two or three feet long; the stems rise to six or seven feet high, and three or four inches in diameter; leaves large, rough on both sides; flowers in large umbels of a yellow colour.

The drug is obtained by wounding the root, from whence the juice issues and concretes; the finest sorts are in tears, that in mass is always loaded with impurities.—G.

Opoponax is rarely used; it possesses emmenagogue and antispasmodic virtues; but so many medicines of a similar class are already in use, that it is not likely to become a favourite remedy. According to Pelletier it is thus composed, resin, 42; wax, 0.3; gum, 33.4; starch, 4.2; malic acid, 2.8; bitter matter, 1.6; woody fibre, 9.8; water containing volatile oil, 5.9. The resin is of a yellowish-red colour, and is soluble in the alkalies, and in alcohol and ether. The gum is yellow and transparent, it forms mucilage with water, and is not precipitated by acetate of lead, nor by neutral salts of silver or mercury; it is precipitated by alcohol and subacetate of lead.*—J. D. M.

Officinal. Gummi Resina.
Dosis, *a* gr. x. *ad* ʒss.

DELPHINIUM STAPHISAGRIA. *Stavesacre.*

Class and Order, POLYANDRIA TRIGYNIA. Nat. Ord. RANUNCULACEÆ.

GEN. CHAR. *Calix* coloured, deciduous, irregular, upper leaflet protruded at the base into a spur; *Petals* four, two upper ones with appendages included within the spur.

Delphinium *Staphisagria;* leaves palmate, lobes obtuse; spur very short; bracteas at the base of the foot-stalks; pedicles hairy.

D. Staphisagria, *Wild. Sp. Pl.* ii. 1226. *Woodville, Med. Bot.* iii. p. 417.

A very ornamental plant; but, being a native of Italy and the warmer parts of Europe, does not succeed so well in the open ground as most others of the genus; it is an annual plant with showy flowers, growing from a foot to eighteen inches high; root-leaves large, palmated, gradually becoming smaller as they ascend the stem; stalks covered with dense hairs; flowers of a deep blue purple, redder at the edges, and deeper at the base; seeds rough, and black, angular.—G.

Stavesacre seeds are acrid, nauseous, and bitter; they are rarely used internally, though they posess anthelmintic virtues of a very high order. They are most commonly applied externally when made into an ointment with axunge, for the purpose of destroying pediculi

* Berzelius, Traité de Chimie, vi. 154

and other insects on the scalp and other parts. They owe their activity to a vegetable alkaloid, which was discovered in France by MM. Lassaigne and Feneulle, and by Brandes in Germany at the same time. It is extremely poisonous; Orfila found that a few grains diffused in water killed a large dog in two hours; the symptoms observed were giddiness, restlessness, and latterly convulsions. When united with an acid, the same quantity caused death in about half an hour.* Delphinia is not crystallizable; it is white, pulverulent, and extremely bitter and acrid; it unites with, and neutralizes the acids, but its salts do not crystallize.—J. D. M.

Officinal. Semina.
Dosis, *a* gr. iij. *ad* gr. viii.

SMILAX Sarsaparilla. *Sarsaparilla.*

Class and Order, Diœcia Hexandria. Nat. Ord. Smilaceæ.

Gen. Char. Male; *Calix* six-leaved; *Corolla* wanting.
Female; *Calix* five-leaved; *Corolla* wanting; *Styles* three; *Berry* three-celled; *Seeds* one to three.

Smilax *Sarsaparilla;* stem prickly, nearly square; leaves unarmed, ovate-lanceolate, cuspidate, about five-nerved, glaucous beneath.

S. Sarsaparilla, *Lin. Sp. Pl.* 1459. *Woodville, Med. Bot.* iii. p. 528.

All the species of this genus are said to possess similar medical properties to the present one; the larger number of them are natives of America; our present plant is common in Virginia and several parts of South America. The drug which is imported as Lisbon Sarsaparilla comes from the Brazils, and is the most valuable; two or three other sorts are found in the drug market, besides some spurious kinds, as the roots of the *Aralia nudicaulis*, *Carex arenaria*, and *C. hirta*, the two latter are called German Sarsaparilla, and are sometimes used as substitutes for the true drug. In all the species of Smilax the pith or centre of the roots is white and ligneous, and all those kinds in which this is wanting may safely be rejected as spurious.

Root branched and fibrous, growing to the length of three or four feet, rather thicker than a goose-quill, externally brown, internally white; stems shrubby, long, slender and climbing, slightly angular, beset with strong scattered awl-shaped hooked spines; leaves ovate, with a short terminal point; flowers unisexual, inconspicuous; berry of a red-colour,

* Orfila, Toxicologie Generale, i. 739.

the size of a currant, containing but one perfect seed. Was introduced into Britain in 1664; Loudon enumerates forty-one species.—G.

Sarsaparilla was introduced by the Spaniards in the year 1563, for the cure of *Lues venerea*, and it is an example of the influence of fashion on medicines. When first introduced it was much praised, and came into extensive use. It then was entirely neglected, but has been revived of late years. Many practitioners trust entirely to sarsaparilla for the cure of primary syphilis, and have entirely discarded mercury; but it is in the sequelæ of syphilis that its good effects are most manifest. It seems to act as an alterative, for in many cases of general bad health unconnected with syphilis, or any other formed disease, the exhibition of sarsaparilla has effected a cure. According to Pallotta, the infusion of sarsaparilla when digested for some time with hydrate of lime yields a salifiable base *(Paragline,)* which is soluble in boiling alcohol, and which is deposited on cooling in the form of a white powder of a disagreeable bitter taste. It unites with and neutralizes the acids, and when taken into the stomach it causes nausea. Folchi states, that when an infusion of the inner part of the sarsaparilla is mixed with animal charcoal, and then filtered, small crystals are deposited by spontaneous evaporation; these he found to be alkaline, and to possess little taste. He gave the name of *Smilacine* to this substance. The exterior of the root or the cortical part contains much more active matter than the interior or woody part.—J. D. M.

Officinal. Radix.

PYROLA UMBELLATA. *Umbel-flowered Winter-green.*

Class and Order, DECANDRIA MONOGYNIA. Nat. Ord. PYROLACEÆ.

GEN. CHAR, *Calix* five-cleft; *Petals* five, often connected at the base; *Anthers* opening with two pores; *Capsule* superior, five-celled; *Seeds* numerous, invested with a long arillus.

Pyrola *umbellata;* flowers in umbels.

P. umbellata, *Lin. Sp. Pl.* 568. *Bot. Mag.* t. 778.
Chimaphylla corymbosa, *Pursh, Fl. Sept Amer.* i. p. 299.

THIS beautiful species is dispersed over North America and the northern parts of Europe and Asia, but is not found in Britain; its flowers somewhat resemble those of *P. rotundifolia*, (a native species,) but are more showy. Root perennial, creeping; stems angular, erect, or slightly procumbent, four to six inches high; leaves in irregular whorls, lanceolate, deeply serrated, smooth, of a deep shining green; flowers in umbels of five or six, of a pale

cream-colour, with the tips of the petals bright red; stamens ten, of a full purple-colour, which beautifully contrast with the delicate petals.—G.

Though much esteemed in America, the *Pyrola umbellata* has never been much used in this country. In America the extract is used as a mild mucilaginous bitter in many diseases, particularly in nephritic and urinary affections, and the leaves are applied as external remedies in indolent ulcers, and even in cancer. As the extract is prepared in America, numerous adulterations are practised, and the extract must be considered an uncertain preparation—J. D. M.

Officinal. Radix, Caules, et Folia.

Officinal preparation. Extractum Pyrolæ Umbellatæ, *Dub.*

ARBUTUS Uva-Ursi. Red Bear-berry.

Class and Order, Decandria Monogynia. Nat. Ord. Ericeæ.

Gen. Char. *Calix* deeply five-cleft; *Corolla* ovate, pellucid at the base; *Berry* superior, five-celled, many-seeded.

Arbutus *Uva-Ursi;* stems procumbent; leaves obovate, entire, evergreen; racemes terminal.

A. Uva-Ursi, *Lin. Sp. Pl.* 566. *Fl. Brit.* 443. *Engl. Bot.* t. 714. *Woodville, Med. Bot.* ii. p. 194. *Hooker, Br. Fl.* p. 189.

A native of the northern parts of England and Scotland, as well as of North America, and many parts of Europe; it is a dwarf procumbent shrub, with long trailing stems; leaves rigid, entire, edges revolute; flowers in small crowded terminal racemes, of a delicate rose-colour; fruit small, red, austere and mealy. It grows in dry heathy spots, and among rocks at a considerable elevation; it is very abundant in the Highlands, the western islands, and the north of Scotland. It was growing in considerable abundance a few years ago a few miles from Halifax in Yorkshire; but I learn from Mr Leyland, a well known botanist of that place, that it is nearly, if not entirely, eradicated by the medical practitioners of that neighbourhood.—G.

The leaves of the Arbutus have been much recommended as tonics in diseases of the kidneys and bladder. They are frequently employed in America,* but have not come into general use in this country. Their taste is bitter and somewhat astringent. According to an analysis by Meissner, they contain, gallic acid, 1.2; tannin, 36.4; resin, 44; extractive mixed with malate of lime and muriate of soda, 3.312; residue of extractive mixed with

* Duncan's Dispensatory, 240.

citrate of lime, 0.862; gum, 15.7; extractive matter separated by the action of potass, 17.6; woody fibre, 9.6; water, 6.0.—J. D. M.

Officinal. Folia.

Dosis, *a* gr. xv. *ad* ℈ii. Pulveris Foliorum.

ARISTOLOCHIA Serpentaria. Virginian Snake-Root, or Birth-Wort.

Class and Order, Gynandria Hexandria. Nat. Ord. Aristolochiæ.

Gen. Char. *Perianth* superior, single, tubular, often swelling at the base; the *Mouth* on one side, dilated, one-lipped; *Stigma* with six lobes; *Capsule* inferior, with six cells.

Aristolochia *Serpentaria;* leaves cordate, oblong, acuminate; stem flexuose, ascending, peduncles radical; lip of the corolla lanceolate.

A. Serpentaria, *Lin. Sp. Pl.* 1363. *Woodville, Med. Bot.* ii. p. 291.

A low perennial plant, a native of North America, long an inhabitant of this country, having been introduced in 1632. Root-stock thick, fleshy; fibres numerous, slender; stems weak, slender, straggling, jointed, at each joint making an angular deviation, so that the stems are zigzag; leaves cordate; flowers dull-purple. Numerous species of this genus are used medicinally in different countries; formerly the *A. Clematitis* was in much repute, and all the species were considered useful in aiding parturition, from which they have acquired the name of Birth-wort, and from their imaginary power of being complete antidotes to the poison of snakes, is to be attributed their vernacular term snake-root. All the species are of curious structure; many of them are hardy and climbing; thirty-one species are enumerated by Loudon.—G.

The root of the *Aristolochia serpentaria* is very highly valued in America, as a remedy for the bites of poisonous serpents. In Europe it is used as an aromatic tonic, and it does not possess virtues superior to many of its class. It is used as a gargle in putrid sore throat, and it is given in the lower stages of fever to support the strength. Its virtues depend in a great measure on the essential oil which it contains. Bucholz found volatile oil, 0.5; soft resin of a yellowish green-colour, 2.85 extractive 1.70; extractive analogous to gum, 18.10; woody fibre, 62.4, water 14.5.* Chevalier has also examined this root, and he believes its activity to depend on an acrid extract which he separates by precipitating the decoction with acetate of lead, then acting on the precipitate with alcohol, which dissolves the greater part of the precipitate; he then evaporates the alcoholic solution to the consistence of ex-

* Traité de Chimie, vi. 173.

tract, and acts on the extract with water, the water contains the acrid, which he considers the active ingredient in the root.—J. D. M.

Officinal. Radix.
Officinal preparation. Tinctura Aristolochiæ Serpentariæ. *Lond. Edin. Dub.*
Dosis, *a* gr. x. *ad* ʒss. Radicis; *a* ʒi. *ad* ʒiii. Tincturæ.

DORSTENIA Contrayerva. Angular-leaved Contrayerva.

Class and Order, Tetrandria Monogynia, Nat. Ord. Urticeæ.

Gen. Char. *Receptacle* fleshy, round or angular, in which the solitary seeds are situated.

Dorstenia *Contrayerva;* receptacle quadrangular; leaves palmate, deeply pinnate, serrated.
D. Contrayerva, *Lin. Sp. Pl.* 176. *Woodville, Med. Bot.* i. p. 140.

Root perennial, knotty, fibrous; leaves on long foot-stalks, palmate, with five, seven, or more lobes, all radical; flower-stems erect, round, three or four inches high, terminated by the fleshy quadrangular receptacle, in which the flowers are imbedded; these are in some antheriferous, and in others pistiliferous; it is a native of South America and the West Indian islands; two other species, *D. Houstonia* and *D. Drekena*, are said to possess similar virtues, and the root of the three species are indiscriminately gathered and exported as Contrayerva.—G.

Contrayerva is an aromatic tonic. It is seldom prescribed in Britain, but is a favourite remedy in the Brazils; it is employed in fevers, especially in those which are commonly called nervous; in dysentery, in general debility, and as a remedy for the bites of poisonous reptiles. Many authors have extolled this root as a most valuable medicine, but experience has not confirmed their favourable report.—J. D. M.

Officinal. Radix.
Officinal preparation. Pulvis Contrayervæ Compositus. *Lond.*
Dosis, *a* gr. xv. *ad* ʒss. Pulveris Radicis; *a* ℈i. *ad* ℈ij. Pulveris Compositi.

DRYMIS WINTERI. Winter's-Bark.

Class and Order, POLYANDRIA TETRAGYNIA. Nat. Ord. WINTEREÆ.

GEN. CHAR. *Calix* two or three-cleft; *Petals* six to twelve; *Stamens* club-shaped; *Anthers* two-lobed; *Style* wanting; *Berries* clustered; *Seeds* disposed in two rows.

Drymis *Winteri;* leaves elliptical, obtuse, coriaceous; flower-stalks in terminal clusters.

D. Winteri, *Lin. Supp.* 269. *Decandolle Prod.* i. p. 78.
Wintera aromatica, *Willd. Sp. Pl.* ii. p. 1239. *Woodville, Med. Bot.* p. 647, t. 226.

THE tree producing Winter's-bark is one of the largest growing on the inhospitable shores of Terra del Fuego, attaining to the height of fifty feet. It is an evergreen; the leaves placed alternately; flowers small, white, odorous; berries ovate, spotted. The bark was first brought to England by Captain Winter from the Straits of Magellan in 1579. It has an agreeable aromatic taste, between that of Cinnamon and *Canella alba*, and was considered by Linnæus as the bark of the last named plant, but was described by Forster, who accompanied Captain Cook, under the name of Drymis, which is retained by Decandolle, who has described four other species of the genus.

At Fig. 3 I have drawn a specimen I found in the late Dr Rutherford's collection of barks, bearing the name *Wintera granatensis.* Its taste is more pungent than the true Winter's-bark, but I have no particulars from whence it was procured. "The bark of *D. granatensis*, called *Casca d'Anta* in Brazil, is much used against colic; it is tonic, aromatic, and stimulant, and resembles, in nearly all respects, the *D. Winteri* or Winter's-bark."—*Plantes Usuelles*, 26–28. Fig. 1 was drawn from a fine specimen in the same collection, marked "*Wintera aromatica*, true, from the Straits of Magellan." Fig. 2, which represents the bark after the removal of the epidermis, was from the Materia Medica Museum.—G.

Winter's-bark is a valuable aromatic stimulant and tonic; but it does not possess any properties which render it superior to others of its class. It forms an admirable addition to the simple bitters, such as gentian, quassia, or calumba; continental physicians prescribe it more frequently than the British. Canella is frequently substituted for Winter's-bark, and the fraud is a very harmless one, as the virtues of each are the same. Henry found acrid volatile oil; aromatic resin free from acridity; coloured extract; extractive insoluble in boiling water; gum; starch; tannin; vegetable fibre; and various salts.* More recently, Robinet and Petroz have analyzed this bark, and, in addition to the substances mentioned by Henry, they have found sugar analogous to *mannite*, and an extremely bitter extract.† According to Cartheuser, it contains about one-third per cent. of volatile oil.—J. D. M.

Officinal. Cortex.
Dosis, *a* gr. xv. *ad* ʒss. Corticis.

* Richard, Hist. Nat. Med. ii. 605. † Berzelius, Traité de Chimie, vi. 241.

PLATE 38

Pl. 38.

Drymys Winteri

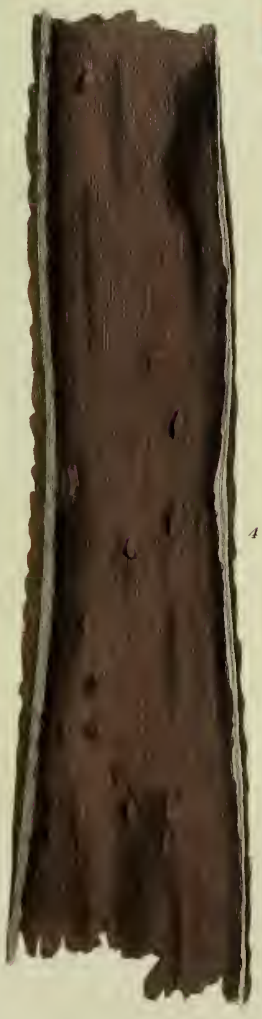
1

2

D. granatensis

3

Pl. 39.



4

5

6

Exostemma caribea

G. Graves Del.

W.H. Lizars Sculp.

EXOSTEMMA Caribea. *Caribeæan Exostemma.*

Class and Order, Pentandria Monogynia. Nat. Ord. Rubiaceæ.

Gen. Char. *Calix* five-toothed; *Corolla* monopetalous, funnel-shaped; *Limb* five-parted, hairy; *Stamens* protruding; *Capsule* oblong, rounded, two-celled; *Seeds* numerous, with a membranous edge.

Exostemma *Caribea;* peduncles axillary and terminal, one-flowered; leaves ovate, lanceolate.

E. Caribea, *Andrew's Bot. Repos.* t. 481.

This genus was separated from Cinchona by Decandolle, and formed into a distinct genus,—the distinguishing features of which are the limb of the corolla being thickly cloathed with pubescence, and the stamens protruding, which in all the true cinchonas are included in the tube of the flower. Besides these botanical discrepancies, this species differs in its medicinal properties, and would rather class with emetics than tonics. In external appearance, it differs materially from the cinchona bark; it is of a dark, blackish purple colour, having an exceedingly rough epidermis; and is totally devoid of the aromatic flavour that accompanies the officinal cinchonas. It was introduced from the West Indies in 1780, but has never been held in estimation in this country; it is sometimes found broken into small pieces, intermixed with the true drug, and is said to enter largely into the mixture of the various kinds when sent to the drug-mill. Fig. 4 was drawn from the Materia Medica Museum; Fig. 5 and 6 from those of Dr Rutherford.—G.

The bark of the Exostemma is tonic and astringent, but it is seldom used. It occurs as a home adulteration of Peruvian bark, from which it is distinguished by chemical analysis, as well as by its therapeutic qualities. It contains no proximate principle; at least none has as yet been discovered.—J. D. M.

Officinal. Cortex.

PLATE 39.

ACONITUM NAPELLUS. *Common Monkshood, or Wolfsbane.*

Class and Order, POLYANDRIA PENTAGYNIA. Nat Ord. RANUNCULACEÆ.

GEN. CHAR. *Calix* five petal-like, irregular parts, the upper one concave and helmet-shaped, containing two pedunculated nectaries.

Aconitum *napellus;* upper leaflet of the calix arched at the back; spur of the nectary nearly conical, bent down; wings of the stamens cuspidate or none; lobes of the leaves cuneate, pinnatifid; germens three to five, glabrous or hairy.

A. napellus, *Lin. Sp. Pl.* 751. *Engl. Fl.* iii. p. 31. *Woodville, Med. Bot.* i. t. 6. *Hooker, Br. Fl.* p. 28. *Don. Syst. Gard.* i. p. 56.

ROOT perennial, fusiform; stem from two to four feet high, leafy; leaves deeply cut, of a full shining green; flowers in spikes of a pale blue colour, sometimes quite smooth, at others thickly covered with hairs, which are particularly long on the veins and edges of the petals.

The plant varies considerably as to pubescence and colour, in some seasons being of a deep blue, and in succeeding years becoming of a pale violet or almost white. It has but slender claims to be considered a native of Britain, though often found wild, both in England and Scotland. I have for several years past found it growing on the banks of the Esk in several places, between Dalkeith and Rosslyn, also in a meadow south of Edinburgh, through which flows a small rapid stream from the Pentland hills, and where it has apparently grown for many years; but on the banks of the same water course, I have found also the *Iris Siberica*, *Germanica, and gramineus*, and a large patch of *Hemerocallis flava*, the yellow day-lily, which in all probability have been thrown from some garden; in these wet situations the flowers appear of a paler hue, and more pubescent than when growing in drier places.

I have also found the *A. lycoctonum* growing luxuriantly amongst rocks in the Esk, below Rosslyn, where it had most likely been deposited after some flood, which had brought it down the stream; it is a native of moist woods in Germany, and thrives abundantly in this climate; it is used abroad to mix with food to destroy wolves, from which circumstance it has with its congeners acquired the common appellation of wolfsbane.

The monkshood is among the most poisonous of the British plants, every part being deleterious; even the effluvia from the flowers are said to be narcotic. Numerous instances are on record of the fatal effects that have followed from eating the plant; one instance that fell under my notice, was that of a labouring gardener, who had been digging up the roots of Jerusalem artichokes for supper, and had inadvertently taken those of the present plant with them, to which they bear a considerable resemblance when not

Aconitum Napellus.

in a growing state. The roots were boiled and eaten by the gardener, to whom they proved fatal, and by another person who was an inmate of the same house; about a quarter of an hour after the roots were swallowed both the men complained of a burning sensation in the throat, which was not allayed by drinking plentifully of water; this symptom was followed by violent pains in the stomach and bowels, convulsive contractions of the face and limbs; these were speedily followed by insensibility; medical aid was called in about half an hour after the effects above-mentioned appeared, and emetics freely given; in the fatal case, without any effect; in the other, soap and water caused violent retching and a free evacuation of the bowels, after which the man appeared sinking, but upon administering warm brandy and water, from time to time, gradually recovered, but it was several weeks before he was able to return to his accustomed labour. About an hour after the food had been eaten, the man who died became strongly convulsed, with continued distortions of the limbs and countenance, the teeth and hands were clenched, the eyes partly closed, and the face of a livid purple, with white blotches; all attempts at relieving the stomach failed, and he died within three hours, without having been relieved by any evacuation. A *post mortem* examination was not permitted by the relatives of the deceased, but from the pain evidently endured much inflammation must have existed.

All the species of Aconite appear to possess similar properties; it is doubtful whether the present species, the *neomontanum* or the *paniculatum* is the true officinal, but from the identity of their properties, there can be little doubt but they may be indiscriminately applied to the same purposes. Of the extra-European kinds, the most virulent is probably the *A. ferox* figured by Dr Wallich, who gives the following interesting information: "There are three other species of *Aconitum* or monkshood, all of them tuberous-rooted, which inhabit the southern side of the Himalaya, and are considered as strong poisons by the natives. Our species *(A. ferox,)* however, exceeds them all in virulence, and is probably the most deleterious vegetable poison of continental India." He adds, "on the subject of the Nepal poisons, the late Dr Hamilton has the following observation, in his *Account of the Kingdom of Nepal*, p. 93. "The term *Bish* or *Bikh*, according to the pronunciation of the same letters in the plains, or on the mountains, is applied to four different plants with tuberous roots, all in great request. I have already mentioned the *Singgiya Bish*, as found on the lower mountains and hills, and supposed it to be a species of *Smilax*. The others have not the smallest resemblance to it, but are so strongly marked by a resemblance to each other, that I have no doubt of their all belonging to the same genus, although I have only seen the flowers and fruit of one. This is called *Bishma* or *Bikhma*, and seems to me to differ little in botanical characters from the *Caltha* of Europe. The *Bishma* or *Bikhma* is also, I believe, called *Metha*, although I am not certain but that the name may be also given to the following species, which deserves the most serious attention; as the *Bikhma* is used in medicine as a strong bitter, very powerful in the case of fevers, while the plant which will be next mentioned is one of the most virulent poisons.

"This dreadful root, of which large quantities are annually imported, is equally fatal when taken into the stomach, or applied to wounds, and is in universal use for poisoning arrows; and, there is too much reason to suspect, for the worst of purposes. Its importation would indeed seem to require the attention of the magistrates. The Gorkhalese pretend that it

is one of their principal securities against invasion from the low countries; and that they would so infect all the waters, on the route by which an enemy was advancing, as to occasion his certain destruction. In case of such an attempt, the invaders ought no doubt to be on their guard; but the country abounds so in springs that might be soon cleared, as to render such a means of defence totally ineffectual, were the enemy aware of the circumstance. This poisonous species is called Bish or Bikh and Hadaya Bish or Bikh; nor am I certain whether the Metha ought to be referred to it, or to the foregoing kind.

" The *Nirbiski* or *Nirbikhi* is another plant of the same genus, and like the first kind, has no deleterious qualities, but is used in medicine. The President of the Asiatic Society, in a note annexed to Dr Roxburgh's account of the *Zedoary*, gives the *Nirbisha* or *Nirbikha*, as a Sanscrita or Hindwi name of that plant, which has not the smallest resemblance to the Nirbishi of the Indian Alps. In fact, the nomenclature of the Materia Medica among the Hindus, as far as I can learn, is miserably defective, and can scarcely fail to be productive of most dangerous mistakes in the practice of medicine. For instance, the man whom I sent to Thibet for plants, brought, as the species producing the poison, that which was first brought to me as the Nirbishi, or kind used in medicine."

Dr Wallich goes on to say, " that the roots mentioned above, excepting the *Singgiya*, which Dr Hamilton thinks is a species of *Smilax*, with ternate leaves, and poisonous root and berries, (the latter of which, when applied externally, are said to be a cure against the goitre,) belong to plants of the genus *Aconitum* is quite certain. His herbarium, at present under my charge, contains specimens of three plants, labelled, *Caltha? Bishma*, *C.? nirbisia*, *and C.? Codva;* and though they are in a very young state, they afford evidence enough to prove that two of the three species are identical with my *Aconitum ferox*, the third being perhaps a different species. His statement of the belief of the Goorkas, that the *bish* would protect them from foreign invasion, and his opinion, that such a defence might be easily frustrated, have been fully verified during the late war with Nipal. In Turrays, or low forest-lands, which skirt the approach to that country, and among the lower range of hills, especially at a place called Hetounra, quantities of the bruised root were thrown into wells and reservoirs, for the purpose of poisoning our men and cattle; the attempt, however, was very soon discovered, and effective precautions taken to prevent the occurrence of any serious mischief. I am informed by Henry Colbrooke, Esq., that the bikh is employed in the northern parts of Hindustan for destroying tigers. Arrows poisoned with that drug are shot from bows fixed near the tracks leading to their watering-places; and it generally happens that the animal is found dead at the latter. I am unacquainted with the *Bikhma* which Dr Hamilton speaks of as a strong bitter, and which the late Colonel Kirkpatrick alludes to as a kind of *gentian*, in his Account of the Kingdom of Nepaul, p. 182, (note at the bottom;) and I take this opportunity of bearing witness to the accuracy of the observations of the former author, concerning the defectiveness of the nomenclature of the Materia Medica of the Hindus, which, I must say, extends in an equally lamentable degree to their botanical nomenclature, and this is most especially the case with regard to the natives of Nipal. Not one in twenty of the names of plants which were given to my late friend, while he was in that country, is correct, or has any existence, except in the deceitfulness of the native collectors, whom he was obliged to employ.

" My friend Mr Royle has successfully introduced the plant from the Choor mountain, into the botanic garden at Saharampure, in the north-west of Hindustan, distant about eleven hundred miles from Calcutta. He informs me that the root is sent down into the plains, and used as a medicine, under the name of *Meetha* or *Tileea*, and that, being previously mixed with other drugs, an oil is distilled from it, which is said to be useful in rheumatism.

" I feel highly indebted to Mr J. Pereira, of the General Dispensary Aldersgate Street, London, for the subjoined detail of several interesting experiments made with the roots of *Aconitum ferox*, which I brought with me from Nipal ten years ago. They fully establish the virulence of the poison."—" The experiments which I have made to determine the physiological effects of the root of the *Aconitum ferox*, demonstrate that this substance is a most virulent poison. These experiments were made in the presence of Dr Falconer, assistant-surgeon on the Bengal Establishment, and my brother, on rabbits and dogs, and with the root in the form of powder, spirituous extract and watery extract. Of these preparations, the spirituous extract is by far the most powerful. The effects were tried by introducing this extract into the jugular vein, by placing it in the cavity of the peritoneum, by applying it to the cellular tissue of the back, and by introducing it into the stomach. In all these cases, except the last, the effects were very similar; namely, difficulty of breathing, weakness, and subsequently paralysis, apparently from asphyxia.

" The bodies of most of the animals were examined immediately after death. In all cases, the right side of the heart was found distended with dark-coloured blood, and the left empty. In one or two cases, the auricles were still contracting, but the ventricles had ceased to contract. The galvanic apparatus produced a quivering in a few of the fibres of the ventricles, and either produced or very much increased the contractions of the ventricles. All the voluntary muscles were susceptible of galvanism.

" One grain of the alcoholic extract introduced into the cavity of the peritoneum of a rabbit began to produce its effects in two minutes; death took place in nine minutes and a-half. In a second experiment, of a similar kind, the effects commenced in two minutes and a-half, and death was produced in eleven minutes. Two grains introduced into the jugular vein of a good-sized strong dog produced convulsions in one minute, and death in three minutes. One grain introduced into the cellular tissue of the back of a rabbit began to affect the system at the end of six minutes, and produced death in fifteen minutes. A rabbit was made to swallow three grains of the extract; no effect was produced, except that the animal continued chewing for several hours, as if ruminating, and which arose probably from the local action of the poison on the mouth and throat. The watery is less powerful than the spirituous extract; two grains of it introduced into the peritoneum of a rabbit, did not produce death until the expiration of twenty-seven minutes."—*Wallich's Plantæ Asiaticæ Rariores*, Vol. i. p. 35. tab. 41.

Of this genus about thirty species are enumerated, and also several varieties, the whole of which possess properties identical with the present.—G.

Several species of aconite have been officinal at different times. The whole genus is poisonous, and several cases of poisoning are recorded. When a small quantity of the leaves is chewed, numbness of the lips and tongue followed by a sensation of pricking, is produced. In cases of poisoning with aconite, the symptoms are sometimes those of pure

narcotic poisoning, at others they resemble those of acrid poisoning; sometimes maniacal delirium is present; in other cases the sensorium is not affected. Baron Stoerk introduced this plant as a remedy in chronic rheumatism, and other painful diseases of the neuralgic type; he likewise prescribed it in cancer, scrofula, and syphilis. The only pharmaceutic preparation of the aconite, in addition to the powdered leaves, which is used in Britain, is the extract,—a very uncertain preparation; on the continent, the tincture and wine of the seeds are officinal. The powder of the leaves is perhaps the best form in which we can exhibit it, and the dose ought to be slowly increased, and the effects carefully watched, as it is a remedy which requires to be given in all cases with the greatest caution. Brandes and Peschier have published an account of the discovery of a vegetable alkaloid in aconite; but other chemists have not yet confirmed their researches. I have found a poisonous empyreumatic oil, which I believe owes its properties to a volatile poisonous principle, similar to that of tobacco, hyoscyamus, &c.—J. D. M.

Officinal. Folia.
Officinal preparations. Extractum Aconiti, *Lond.* Pulvis Foliorum, *Lond. Edin. Dub.*
Dosis, *a* gr. ij. *ad* gr. x. Foliorum; *a* gr. $\frac{1}{4}$ *ad* gr. i. Extracti.

References to Plate 40.

Fig. 1. a flower; Fig. nectaries and stamens after removing the perianth.

RICINUS COMMUNIS. *Palma-Christi, or Castor-Oil Plant.*

Class and Order, MONŒCIA MONADELPHIA. Nat. Ord. EUPHORBIACEÆ.

GEN. CHAR. Male; *Calix* five-parted; *Corolla* wanting; *Stamens* numerous.
Female; *Calix* three-parted; *Corolla* wanting; *Styles* three, bifid; *Capsule* three-celled; *Seed* one.

Ricinus *communis;* leaves peltate, palmate; lobes lanceolate, serrated; stem herbaceous; capsules prickly.

R. communis, *Lin. Sp. Pl.* 1430. *Woodville, Med. Bot.* i. p. 171. *Bot. Mag.* t. 2209.

IN Britain this species is an annual, which, under favourable circumstances, sometimes attains the height of twelve to sixteen feet, but which rarely exceeds that of three or four. When well-grown it is one of the most magnificent annual border plants. I raised one from seed sown on a heap of earth that had been dug out from six to seven feet beneath the surface; the seed was deposited in the soil the second week in May; at the end of June it had acquired the height of three, and in August that of fifteen feet. The stem

was four inches in diameter at the surface of the ground; and one of its largest leaves measured more than thirty inches from the insertion of the stalk to the point of the middle lobe. It flowered in September, and ripened its seeds the following month. I gathered more than two pints of ripe seeds, and there were upwards of twenty bunches of unripe ones at the time. The seeds were acrid and very oily. On the setting in of the frost, which was about the beginning of November, the lower leaves began to fall, but the flowers continued to open successively till the end of the year. The stem was covered with a thick coat of bloom, so much so as to appear as if covered with powdered blue.

In its native countries, the *Palma Christi* is a perennial plant, somewhat frutescent, and grows so tall as to require a ladder to collect its seeds; is a native of both the Indies, South America, China, various parts of the south of Spain, and opposite coasts of Africa, and some of the islands in the Mediterranean sea.

It was well known to the ancients and used by them as a cathartic,—the seeds being swallowed entire for that purpose; these are singularly marked, and bear a strong resemblance to an insect, from which circumstance it derives its name of *Ricinus*, a tick.

Nearly the whole of the plants belonging to the Euphorbiaceæ possess active properties, —some as cathartics, others as emetics, and a considerable number are virulent poisons. Among them is the famous manchineel-tree, *Hippomane Mancinella*, which is said to be so poisonous that persons have died from merely sleeping beneath its shade, which, as Professor Lindley remarks, " is not so improbable as it may appear, when the volatile nature of the poisonous principle of these plants is considered."—G.

Castor-oil, so well known as a purgative, is procured by expression, and by decoction. According to Dr Ainslie, that procured by decoction is the clearest and best-looking, and the most common.* According to Dr Thomson, that obtained by pressure is much to be preferred.† The seeds, from which the oil is obtained, are acrid, and purge with great violence. Their activity seems to depend on an acrid acid, which is volatile, and which is apt to get mixed with the oil when heat is employed in its preparation. In all cases in which a mild and strong purgative is desired, castor-oil ought to be employed; it evacuates the bowels freely, and removes any acrid matter with which they may have been loaded. In diarrhœa, and in the first stages of cholera, castor-oil, combined with opium, is very useful; in poisoning with the acrids, it is the only purgative which can be employed with safety. It can be given to the youngest infants, and to the most delicate females. The only objection to its use, is the sickness to which it gives rise, and this may generally be obviated by combining it with an aromatic, or by forming it into an emulsion. When combined with turpentine, it directs the action of that remedy to the intestines, and improves its action; the combination is an excellent vermifuge. Geiger found that the seeds consist of 69.09 of kernel, and 23.82 of epidermis. The kernel contains 46.19 of fixed oil; 2.40 gum; 0.5 vegetable albumen; 7.09 water; 200 of starch and vegetable fibre. The epidermis contains 1.91 of brown resin; 1.91 of gum; 20.00 of vegetable fibre.—J. D. M.‡

Officinal. Semina.
Officinal preparation. Oleum Ricini, *Lond. Edin. Dub.*
Dosis, *a* ʒ v. *ad* ℥ i.

* Ainslie, Materia Medica, i. 256. † El. Mat. Med. and Therap. ii. 277. ‡ Berzelius, Traité de Chimie, vi. 364.

NICOTIANA TABACUM. *Virginian Tobacco.*

Class and Order, PENTANDRIA MONOGYNIA. Nat. Ord. SOLANEÆ.

GEN. CHAR. *Corolla* funnel-shaped; *Stigma* capitate; *Capsule* two-celled.

Nicotiana *tabacum*; leaves sessile, lanceolate, decurrent; mouth of the corolla inflated; segments acute.

N. tabacum, *Lin. Sp. Pl.* 258. *Woodville, Med. Bot.* i. p. 162.

TOBACCO was introduced into this country from America in the year 1570, and from being an article of extreme luxury, has, by constant use, now almost become one of necessity. To persons who have accustomed themselves to its use, either in the form of snuff, smoke, or as a masticatory, its deprivation is attended with serious inconvenience. The present plant is an annual of ready growth and showy appearance, and is an ornament to the flower border. For domestic purposes, cultivators are allowed to grow it to the extent of half a rood; but, as an encouragement to our colonies, it is not permitted to be grown in larger quantities.

Root annual; stems erect, round, slightly grooved, branching at the top; leaves numerous, alternate, pointed, entire,—the lower ones often attaining two feet in length, and from four to six inches in breadth; flowers green at the base of the tube, gradually enlarging, and expanding into five deep rose-coloured segments. The whole plant is covered with a clammy down, which is exceedingly fetid, and every part is strongly narcotic. The same properties pervade the whole of this genus, of which twenty-four species and nine varieties are mentioned in Loudon's Hortus Britannicus.—G.

Notwithstanding the attempts of almost every government both in Europe and Asia, and the severe punishments with which they menaced all those who used tobacco either in the form of snuff or smoke, we find it now habitually used by a very large proportion of the inhabitants of Europe, Asia, and America. It was brought to Britain by Sir Walter Raleigh in the reign of Elizabeth, and in the following reign its use had become so prevalent, that James the VI. published against it under the title of "The Counterblaste to Tobacco;" and the same monarch proposed as a banquet for the devil, "a loin of pork, a poll of ling, and a pipe of tobacco for digestion." * There can be no doubt that the habit of taking any stimulus constantly is injurious, and we know well that tobacco is a stimulus in whatever way it is taken, though in some forms its stimulant properties soon yield to its sedative. Dr Thomson considers snuffing as the least injurious mode of using tobacco; and he considers the statements with regard to its baneful effects as being greatly exaggerated.

* Waverley, i. 219. Notes to Chapter xx.

In the snuff-manufactories of France, where 4000 persons are employed, it has been ascertained that they live as long, and are as healthy, as manufacturers in general. * Smoking produces very different effects on different constitutions,—some get readily habituated to it, while others suffer from nausea, vertigo, vomiting, and general depression. Smoking to excess destroys the tone of the stomach, and causes general emaciation. Tobacco is used medicinally as an errhine, in the form of snuff; as a sedative and expectorant, in the form of smoke; and as an antispasmodic, stimulant, and sedative, in the form of infusion. It is not so well adapted for an errhine as many other substances, on account of its narcotic properties. As a sedative, it is given both by the mouth, and as an enema in the form of smoke; but this form is objectionable, as it is not very manageable, and as the effects come on with great rapidity. As an expectorant, it is useful in those habits where its depressing and nauseating effects are not readily produced, and where inflammatory symptoms are absent. In the form of infusion, it acts, when taken internally in very amall doses, as a diuretic. When given as a glyster, it acts as a stimulant in doses of seven or eight grains; in larger doses it acts as a sedative or antispasmodic, and is frequently used in strangulated hernia, in obstinate constipation, and in ileus.

In cholera, the infusion was proposed as a stimulating, antispasmodic enema, and very sanguine anticipations were formed of its success. I tried it in several cases, but did not find that any permanently favourable result followed.

Two active substances, having a considerable resemblance to each other, have been found in the tobacco. The one, *Nicotianine*, is procured by simple distillation, and appears to be a solid volatile oil. It is poisonous, and its effects are like those of tobacco itself. The other, *Nicotine*, was discovered by Posselt and Reimann in the leaves, and by Buchner in the seeds. It is, when perfectly pure, fluid, colourless, extremely acrid and pungent, and most virulently poisonous. Various processes have been proposed for preparing it.† It combines with the acids, and forms crystallizable and neutral salts with some.‡ Posselt and Reimann's analysis is as follows: In 10,000 parts of the leaves, *Nicotine*, 6; *Nicotianine*, 1; bitterish extract, 287; gum containing malate of lime, 174; green resin, 26.7; vegetable albumen, 26; a substance analogous to gluten, 104.8; malic acid, 51; malate of ammonia, 12; sulphate of potass, 4.8; chloride of potassium, 6.3; potass, which had been combined with malic and nitric acids, 9.5; phosphate of lime, 16.6; lime, which had been combined with malic acid, 24.2; silica, 8.8; woody fibre, 496.9; water, 8828. Traces of starch. §

The empyreumatic oil of tobacco, which is formed whenever tobacco is burned, and which was first known among the Hottentots, who poisoned snakes by putting a drop on their head or tongue, is extremely poisonous. Struck by its deleterious qualities, I was induced to submit it to chemical examination, and was enabled to detect a poisonous principle distinct from the oil, and nearly allied to *Nicotine*. From the mode in which it was procured, I named it *Pyro-Nicotine*.

" *Exp.* 1.—Twenty grains of the oil of tobacco, which had been previously well washed in diluted muriatic acid, were given to a strong rabbit, in the form of emulsion; in ten mi-

* El. Mat. Med. and Therap. ii. 123.

† Berzelius, Traité de Chimie, v. 438.

‡ Berzelius Traité de Chimie, v. 177.

§ Ibid, vi. 280.

nutes the animal appeared weak, and lay on its belly; in twenty it was affected with general spasm; in an hour it seemed rather recovered but was very drowsy; next morning, seemed still stupid, but took its food with avidity; in the course of the day it completely recovered.

" *Exp.* 2. About two-thirds of the acidulated solution of the oil used in Exp. 1. were given to a rabbit. In three minutes it began to run rapidly about, apparently stupified, as it came against all the obstacles in its way. In five minutes it had entirely lost the use of its hind-legs; in six, all consciousness seemed gone, the breathing was laborious; severe and general tremors supervened; and it died in eight minutes and a-half after the injection of the poison. The heart was beating at the rate of 80 in the minute, and continued to contract for twenty minutes.

" *Exp.* 3. Thirty drops of the distilled liquid *(Pyro-nicotine)* were given to a young rabbit. It was almost instantaneously seized with convulsions, and died in about a minute. The convulsions were frequent, but without *opisthotonos*. The heart continued to act for thirty-five minutes.

" The *Pyro-nicotine* seems to be as rapid in its action as *Hydrocyanic* acid; the quantity given was equivalent to about fifteen drops of the oil. The action of the tobacco oil is more rapid than any of the others, and there is less tendency to convulsion." *

Officinal. Folia.

Officinal preparations. Infusum Nicotianæ Tabaci, *Lond.* Vinum Nicotianæ Tabaci, *Edin.*

Dosis, *a* gr. i. *ad* gr. vi. pro Sternutamento; *a* gtt. xxx. *ad* gtt l. Vini; *ab* ℥vi. *ad* lbj. Infusi pro Enemate.

HYOSCYAMUS NIGER. *Common Henbane.*

Class and Order, PENTANDRIA MONOGYNIA. Nat. Ord. SOLANEÆ.

GEN. CHAR. *Calix* tubular, five-cleft; *Corolla* funnel-shaped, oblique; *Capsule* two-celled, opening with a lid.

Hyoscyamus *niger;* leaves amplexicaul, sinuated, flowers nearly sessile.

H. niger, *Lin. Sp. Pl.* 257. *Fl. Brit.* p. 254. *Engl. Bot.* t. 591. *Woodville, Med. Bot.* i. t. 52, p. 143. *Hooker, Br. Fl.* p. 93.

THE Henbane is usually of biennial duration, but very frequently only survives the first year; it is found in many parts of England and Scotland, but, like many other plants that are commonly cultivated, has probably been originally cast out from gardens. It grows

* Edin. Med. and Surg. Journal, No. 115.

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Hyoscíamus niger.

W.H.Lizars sculp.

on sandy and chalky soils, usually in the vicinity of towns or villages, as also on the sea shore; the largest I remember to have met with in a wild state grew by the road side bordering the residence of my valued friend the Rev. George Thomas Langton, at Barton-Bendish in Norfolk, where it attained to the height of five or six feet or more, and was branched from the bottom; all the waste ground in that neighbourhood produced henbane in abundance.

Root fusiform, thick, succulent, wrinkled, fibrous; stems from one to three or four feet high, much branched, round; leaves deeply sinuate; calix veined, the bottom part swollen and enclosing the capsule, from which when ripe the lid or upper part falls off. The whole plant is covered with viscid fetid hairs, which are more dense and longer on the globular part of the calix. The whole plant gives out a heavy peculiar odour, which is highly narcotic. The other species are said to possess the same medical properties as the present one; twelve are mentioned in *Loudon's Encyc.*—G.

Hyoscyamus is perhaps, after opium, the most valuable narcotic in our Materia Medica; it agrees with most constitutions, and does not in general cause that depression and nausea which follow the sleep induced by opium; it also acts as a gentle laxative. I have found it when combined with a diaphoretic, one of the best remedies in those slight febrile attacks which accompany common colds in some habits. Combined with aloes and soap, it is well known as "Hamilton's Female Pill," one of the best and mildest purgatives for habitual use. Like Belladonna, it possesses the property of causing dilatation of the pupil, and of giving relief in ophthalmia.

Brandes and some other continental chemists say, that they have isolated the active principle of Hyoscyamus, to which they give alkaline properties; one of them indeed says, that it differs from all others in being able to stand a red heat without decomposition. Berzelius doubts the correctness of these statements.

The empyreumatic oil of Hyoscyamus was examined by me at the same time with those of the tobacco, &c. I found its effects more nearly allied to that procured from opium than any of the others, except conium.

"*Exp.* 1. Twenty drops of the oil, previously well-washed in dilute acid, were given to a rabbit. In a quarter of an hour it appeared giddy, and began to run in a circular track; in twenty-minutes it appeared completely narcotised, and was locked up for the night. Next morning it seemed quite well.

"*Exp.* 2. After an interval of two days, the acid solution of the oil above-mentioned was given to the same rabbit; in ten minutes it became giddy, and commenced the same circular race which it had taken when the oil was given; in twenty-eight minutes it suddenly sprung forward, and spreading out its legs, remained in that position for some minutes; slight spasms came on; when touched it fell on its side, and could not again rise; it died forty-nine minutes after the exhibition of the poison. The heart acted for ten minutes after death."* —J. D. M.

Officinal. Folia.

Officinal preparations. Tinctura Hyoscyami Nigri, *Lond. Edin. Dub.* Extractum Hyoscyami Nigri, *Lond. Edin. Dub.*

Dosis, *a* gtt. xl. *ad* ʒiss. Tincturæ; *a* gr. ij. *ad* vi. Extracti.

* Edin. Med. and Surgical Journal, No. 115.

PIMENTA VULGARIS. *Pimento or Allspice.*

Class and Order, ICOSANDRIA MONOGYNIA. Nat. Ord. MYRTACEÆ.

GEN. CHAR. *Calix* of five segments; *Petals* five; *Ovary* two-celled; *Ovules* solitary, appense; *Style* straight; *Stigma* somewhat capitate.

Pimenta *vulgaris;* flowers trichotomous, panicled; leaves oblong, lanceolate, acuminate.

Myrtus vulgaris, *Lin. Sp. Pl.* 676. *Woodville, Med. Bot.* i. p. 77. *Bot. Mag.* t. 1236.

THIS species was separated from the genus *Myrtus* by Professor Lindley, from the difference in the structure of its fruit; is a native of the West Indies, where it is an evergreen tree, growing to the height of thirty feet; it produces its flowers at the extremities of the branches in large loose bunches; they are pale greenish-yellow, and are followed by purple berries, each containing two seeds; as soon as they are nearly ripe they are gathered, and either dried in the sun or by artificial means; when perfectly dry they are packed for exportation.—G.

The Pimento berries or Allspice belong to the same class of remedies with the clove, cinnamon, and nutmeg. They derive their name of Allspice from combining the flavour of these three aromatics, and they may be used as a substitute for any or all of them in practice. They are not, however, much used in medicine, but are frequently taken as condiments. Bonastre has examined both the kernel and the husk of the Pimento. His results are as follow:

	Husk.	Kernel.
Volatile oil,	10.0	5.0
Soft green resin,	8.0	2.5
Concrete fixed oil,	0.9	1.2
Extract containing tannin,	11.4	39.8
Gum,	3.0	7.2
Brown gelatinous matter obtained by the action of potass,	4.0	8.8
Resinoid matter,	1.2	3.2
Extract containing sugar, by decoction,	3.0	8.0
Malic and gallic acids,	0.6	1.6
Vegetable fibre,	50.0	16.0
Ashes containing various salts,	2.8	1.9
Water,	3.5	3.0
Loss,	1.6	1.8.—J. D. M.

Officinal. Baccæ.

Officinal preparations. Aqua Pimentæ, *Lond. Edin. Dub.* Oleum Pimentæ, *Lond. Edin. Dub.* Spiritus Pimentæ, *Lond. Edin. Dub.* Pilulæ Opiatæ, *Edin.* Syrupus Rhamni, *Lond.*

Dosis, *ab* ℥i. *ad* ℥iv. Aquæ; *a* gtt. iv. *ad* vi. Olei Volatilis; *a* ℥ij. *ad* ℥ss. Spiritus; *a* gr. vi. *ad* xx. Baccarum.

CARYOPHYLLUS AROMATICUS. Clove-Tree.

Class and Order, Icosandria Monogynia. Nat. Ord. Myrtaceæ.

Gen. Char. *Calix* funnel-shaped, four-parted; *Petals* four; *Germen* two-celled, oblong, fruit dry, one or two-celled.

C. aromaticus, *Lin. Sp. Pl.* 735. *Woodville, Med. Bot.* ii. p. 366. *Bot. Mag.* t. 2749.

Eugenia caryophyllata, *Willd. Sp. Pl.* ii. p. 965. *Hort. Kew.* ed. 2, iii. p. 73.

The clove-tree is a native of the Moluccas, but is extensively cultivated in the West Indies, China, the East Indies, as well as the adjacent islands. The tree grows to the height of forty or more feet, and is branched almost from the bottom; the whole tree is aromatic, but the buds or unexpanded flowers are the officinal part, and are the well-known spice. Few clove plants are in this country, nor does it thrive so well as many other tropical trees. At the distribution of the plants belonging to E. J. A. Woodford, Esq. of Belmont House, Vauxhall, about twenty years ago, the only plant known then to be in the country was sold for somewhat exceeding twenty guineas. The leaves are long, pointed, and placed on a foot-stalk; which is said to be the most aromatic part of the plant; the flowers grow in clusters at the extremity of the branches, are of a yellowish green colour, tinged with red, which is stronger on the tubular part of the calix, and often is of a purple tinge. When fresh, the spice has a somewhat unctuous feel, and when fine, the petals should be persistent on the crown of the calix; they are often adulterated by the admixture of others, from which the oil has been extracted, which may be detected by the lightness of their weight and colour; and if an incision be made in them, they appear quite dry, whilst in the sound and perfect spice the oil appears upon the puncture of a pin. This is the only known species.—G.

Of the aromatic excitants, cloves are perhaps the most powerful and certain; they require, however, to be given with caution, as they are apt to cause vertigo, headach, and other disagreeable symptoms, when given in an overdose. The essential oil of cloves is extremely active; its taste is warm, aromatic and acrid: when taken undiluted, it causes a burning sensation in the mouth and fauces, and small vesications are frequently formed. In cholera, I found that the oils of cloves, cinnamon, and nutmeg, as well as those of peppermint and cajeput, were retained on the stomach when nothing else would remain, and I ob-

served that the stimulation of the system by them was more permanent and more beneficial, than that produced by alcohol or ether. Bonastre has examined oil of cloves, and has discovered a crystalline substance, which he calls *Caryophylline*, but which appears to be a variety of *Stearoptêne*. Nitric acid strikes a deep red colour with oil of cloves, and we are warned not to confound it with that of strychnia or morphia in medico-legal investigation. Oil of cloves is very useful in alleviating toothach.—J. D. M.

Officinal. Calyx et Flores nondum expliciti.

Officinal preparations. Infusum Caryophyllorum, *Lond.* Confectio Aromatica, *Lond.* Oleum Volatile, *Lond. Edin. Dub.* Electuarium Aromaticum, *Dub.*

Dosis, *a* gr. vi. *ad* xv. Caryophyllorum; *a* gtt. iii. *ad* vi. olei; *ab* ʒi. Infusi, *ad* ʒv.

MYRISTICA MOSCHATA. True Nutmeg-Tree.

Class and Order, DIŒCIA MONADELPHIA. Nat. Ord. MYRISTICEÆ.

GEN. CHAR. Male flower: *Calix* wanting; *Corolla* campanulate, trifid; *Filaments* united into a columnar tube; *Anthers* six or ten, cohering at the base.

Female flower: *Calix* wanting; *Corolla* campanulate, trifid; *Style* one; *Stigmas* two; *Berry* with an arilled one-seeded nut; *Seed* large, veiny, variegated on the inside.

Myristica *moschata;* leaves oblong, acuminate, smooth; veins simple; fruit solitary, smooth.

M. moschata, *Woodville, Med. Bot.* ii. p. 363. *Willd. Sp. Pl.* iv. p. 869. *Sprengel, Syst. Veg.* iii. p. 64. *Hooker, Exotic Fl.* t. 155-156. *Bot. Mag.* t. 2756-2757.

THE nutmeg is a native of the Moluccas or Spice islands, and has been introduced into the isles of France, Bourbon, and Sumatra, also to our West Indian colonies; to St Vincents, it was brought from Cayenne, and the trees which were originally imported have attained a considerable size, but the nutmeg does not appear to succeed so well in the West as in the East Indies. Dr Hooker has given beautiful representations of both sexes of this valuable tree, first in his splendid Exotic Flora, and afterwards in the Botanical Magazine, with a highly interesting history of the plant, to which I must refer such of my readers as wish to become more particularly acquainted with the details of its political as well as botanical history.

In the Moluccas, it grows to the height of twenty or thirty feet, and is clothed with numerous oblong, pointed, smooth leaves, of a full shining green, with small bunches of pale yellow flowers growing from the axils of the leaves; it blossoms throughout the year, bearing ripe fruit and flowers at the same time; the fruit when at maturity is as large as a

moderate sized pear, and of a similar form, of a reddish-yellow colour on the outside, within nearly white; this when ripe splits in the centre, and exposes the *arillus* or mace with which the nut is enveloped, which is of a brilliant scarlet colour, and very glossy; beneath this is a thin hard shell containing the nutmeg, which when ripe is perfectly smooth, but on drying becomes shrivelled. The spice is gathered at three periods of the year; "in July and August, when the nutmegs are most abundant, but the mace is thinner than in the smaller fruits which are gathered during November, the second time of collecting. The third harvest takes place in the month of March or beginning of April, when the nuts as well as the mace are in the greatest perfection, their number being then not so great, and the season dry. The outer pulpy coat is removed, and afterwards the mace with a knife. The nuts are placed over a slow fire, when the shell becomes brittle, and the seeds or nutmegs drop out; these are then soaked in sea water and impregnated with lime, a process which answers the double purpose of securing the seeds from the attack of insects, and of destroying their vegetating property. It further prevents the volatilization of the aroma. The mace is simply dried in the sun, and then sprinkled with salt water, after which it is fit for exportation."

The best nuts are heavy, firm, of a gray colour externally, within beautifully marbled with red and brown; the mace is at first of a brilliant scarlet, but when dried of a deep saffron colour. The oil, usually denominated oil of mace, is expressed from the small or imperfect nutmegs; it is imported in small earthen jars, is soft, of a yellow colour, having the fragrance of the nutmeg. There are several inferior sorts, and all are liable to adulteration; the best is free from impurities, of a bright colour, and very fragrant.

A few specimens of the tree are now in this country; but as they require the constant temperature of the stove to bring them to perfection, we can scarcely hope to see them flower in Britain.—G.

The nutmeg is a warm, aromatic, stimulant tonic, and is used for the same purposes as cinnamon. It contains an essential and a fixed oil, which are obtained by distillation and expression. To procure the fixed oil, the nutmegs are bruised, moistened with hot water, and then submitted to pressure between heated plates of metal. The oil exudes in a fluid state, but concretes as it cools. It contains volatile oil, which can be separated by distillation with water. The solid oil is prepared in Holland, and is sold under the name of oil or butter of mace, but as it is generally adulterated, and is easily prepared, it ought always to be made by the chemist or apothecary. Mace does not differ in its medical properties from the nut itself. According to Bonastre nutmegs contain 34.16 of concrete fixed oil; 6.0 volatile oil; 2.4 starch; 1.2 gum; 0.8 free acid; 54 woody fibre.—J. D. M.

Officinal. Nuclei.

Officinal preparations. Spiritus Myristicæ Moschatæ, *Lond. Edin. Dub.* Oleum Volatile, *Lond. Edin. Dub.*

Dosis, *a* gr. vii. *ad* ℈j. Nuclei vel Involucri; *a* gtt. iv. *ad* viii. Olei Volatilis.

LAURUS Cinnamomum. Cinnamon.

Class and Order, Enneandria Monogynia. Nat. Ord. Laurineæ.

Gen. Char. *Calix* four to six-parted; *Nectariferous glands* three, with two bristles surrounding the *ovary; Anthers* opening transversely; *Valves* hinged to the upper side.

Laurus *Cinnamomum;* leaves three-nerved, ovate, oblong; nerves disappearing towards the end.

L. Cinnamomum, *Lin. Sp. Pl.* 528. *Woodville, Med. Bot.* i. p. 80. *Bot. Mag.* t. 2028.

This valuable spice-tree is a native of Ceylon, Malabar, Cochin-China, and Sumatra, and is cultivated in the Mauritius, and some of the West India islands. The *Laurus Cinnamomum*, or true cinnamon, is a tree about twenty or thirty feet high, with numerous suckers from the root. The leaves are large, pointed, opposite, growing in pairs, with very prominent nerves, which disappear as they approach the point; the young leaves and stems are at first deep-red, but, as they acquire their full growth, become of a full green. The flowers are both axillary and terminal, of a sullied white colour, and are succeeded by deep purple berries, which are a favourite food with crows and wood-pigeons. It very closely resembles the *L. cassia*, which has longer and narrower leaves, with a less agreeable taste, the bark of which is frequently substituted for that of the true cinnamon, than which it is much heavier, and breaks short, whereas the cinnamon has an irregular and splintering fracture.

Cinnamon is the bark of the young branches, which are cut off and carefully peeled. After the bark is freed from its epidermis, and any parts of the wood that might have been removed in decorticating the stems, the smaller pieces are placed within the larger quills. It soon dries, and is made up in bundles, and, previous to exportation, is examined by government officers to ascertain its quality. It usually comes to our market in small bundles of one or two pounds weight. Cinnamon of the best quality is of a fine reddish-yellow colour, of a very thin texture, of a sweetish full flavour, and is distinguished from cassia by being thinner, lighter, of a brighter colour, and having a flavour pungent, but not fiery, as in that species. The article known in the druggist's shops under the name of cassia buds, are the fleshy receptacles of the seed of this plant.

Fine specimens of the Cinnamon and Cassia, the former in fruit, are now growing in the stove of Patrick Neill, Esq. at Canon Mills, in whose collection at that place are to be seen a greater variety of rare and valuable plants, than are probably to be met with in any private collection in Scotland.—G.

Cinnamon is one of the most agreeable excitants which we possess; it is seldom used alone, but forms a grateful addition to bitter infusions or powders. The volatile oil is extremely pungent, warm, and aromatic, and it has a peculiar sweetness; the oil of cassia which is obtained from the coarser bark of the cinnamon tree, resembles oil of cinnamon in flavour, but it is not so agreeable. The oil of cinnamon is liable to adulteration from its great price, and the oil of cassia is generally used for this purpose, as it is much cheaper, and as it cannot be easily detected. Eighty pounds of fresh bark yield eight ounces of oil, and the same quantity if kept for some years, yields about seven ounces. The leaves of the *Laurus Cinnamomum* contain an oil closely resembling that of cloves, in physical and chemical properties. For further information on the cultivation of the trees, and the preparation of the barks, the reader is referred to Mr Marshall's papers in the Annals of Philosophy for October and November 1817.—J. D. M.

Officinal. Cortex.

Officinal preparations. Oleum Volatile, *Lond. Edin. Dub.* Aqua Cinnamomi, *Lond. Edin. Dub.* Spiritus Cinnamomi, *Lond. Edin. Dub.* Tinctura Cinnamomi, *Lond. Edin. Dub.* Tincturæ Cinnamomi et Cardamomi Compositæ, *Lond. Edin. Dub.* Pulvis Cinnamomi Compositus, *Lond. Edin.*

Dosis, *a* gr. x. *ad* ℈ij. Pulveris Corticis; *a* gtt. iij. *ad* vi. Olei; *ab* ʒi. *ad* ʒiv. Aquæ; *a* ʒii. *ad* ʒj. Tincturæ et Spiritus; *a* ʒi. *ad* ʒiij. Tincturæ Cardamomi et Cinnamomi Compositæ.

LAURUS Nobilis. Sweet-Bay.

Class, Order, Natural Order and Generic Character, see *L. Cinnamomum.*

Laurus *nobilis*, leaves lanceolate, veiny, evergreen; flowers four-cleft, dicœcious.

L. nobilis, *Lin. Sp. Pl.* 529. *Woodville, Med. Bot.* i. p. 94.

The Sweet-Bay is a handsome evergreen shrub, and highly ornamental, and, though a native of Italy and Greece, bears the cold of our climate without injury. In its native soil it rises to the height of twenty or thirty feet, but with us only forms a low bushy shrub, with numerous suckers surrounding the stem; its leaves are a deep shining green, pale beneath, the edges undulated; the plants are unisexual, and have their racemes of white flowers on short pedicels; these are only produced in sheltered situations. Its leaves are occasionally used in culinary preparations.—G.

The berries of the laurel yield on expression a greenish oil, which is occasionally used as an external application. Its virtues depend on the presence of volatile oil, which is aromatic, warm, and stimulant. According to an analysis by Bonastre, the berries are thus

composed: Volatile oil, 0.8; a peculiar crystalline substance, to which he has given the name of *Laurine*, 0.5; a green fixed oil, 6.4; a crystalline fatty matter, 3.5; soft resin, 0.8; starch, 12.95; gum, 8.6; vegetable mucilage, 3.2; uncrystallizable sugar, 0.2; traces of albumen; vegetable fibre, 9.4; saline matters, 0.72; water, 3.2. *Laurine* is obtained by the action of boiling alcohol, and by evaporation. It crystallizes in eight-sided prisms, and is bitter and slightly acrid to the taste.*—J. D. M.

Officinal. Baccæ et Folia.
Dose, *a* gr. x. *ad* ℈ij. Pulveris Foliorum.

LAURUS SASSAFRAS. Sassafras-Tree.

Class, Order, Natural Order, and Generic Character, see *L. Cinnamomum.*

Laurus *Sassafras*; leaves, some entire, others three-lobed.

L. Sassafras, *Willd. Sp. Pl.* ii. p. 348. *Woodville, Med. Bot.* i. p. 91.

This species is common to North America, and bears our climate uninjured; it forms a handsome tree of large dimensions. The leaves that first appear are entire and pointed; these are succeeded by others having only one lobe, but those that follow are constantly with three lobes; the flowers are on short pendant stalks, and are placed in interrupted whorls round the stems.—G.

Sassafras is a stimulant diaphoretic, and is much used in secondary syphilis. The infusion is the best form of exhibition; for as its virtues depend in a great measure on the presence of volatile oil, the decoction becomes much less active. Both the root and wood are used in medicine; the root contains about three per cent. of volatile oil, and is much more active than the wood. The volatile oil is colourless when recent, but it acquires a yellowish red by keeping; it is warm and pungent to the taste; and its odour is rather agreeable. According to Bonastre, it can be separated into two portions, the one lighter, and the other heavier than water.† The oil as it occurs in commerce, is heavier than water, and when long kept deposits crystals of *Stearoptène.*—J. D. M.

Officinal. Lignum et Radix.
Officinal preparations. Oleum Lauri Sassafras, *Lond. Edin. Dub.*
Dosis, *a* gtt. iij. *ad* gtt. vi. Olei.

* Berzelius, Traité de Chimie, vi. 329. † Ibid. v. 423.

LAURUS Camphora. Camphor-Tree.

Class, Order, Nat. Ord. and Generic Character, see *L. Cinnamomum.*

Laurus *Camphora ;* leaves lanceolate, three-nerved.

L. camphora, *Lin. Sp. Pl.* 521. *Woodville, Med. Bot.* iii. p. 419.

Though the larger part of the camphor of commerce is obtained from this species, camphor is a constituent part of a very considerable number of plants of various families. Camphor laurel is a native of Japan, and forms a large tree with long lanceolate leaves and small white flowers. The camphor is obtained from the stem and roots by distillation ; it is also found in small grains, concreted in the grain of the wood, and sometimes as a pulverulent exudation on the surface of the leaves. A principle resembling it is likewise found in thyme, marjoram, rosemary, and numerous other plants, whose odours are emitted on being bruised ; it is also to be procured from cinnamon, and probably from other species of laurel. A considerable part of that imported into Europe has been stated to be the produce of *Dryabalanops Camphora*, but this appears doubtful, from the great price it bears in the Chinese market, which, according to Mr Crawford and Mr Colebrooke, is seventy-eight times the price of common camphor.

The *Dryabalanops Camphora* is a very lofty tree, acquiring the height of nearly a hundred feet. Camphor is found in a concrete state in the trunks of the trees, which is ascertained by boring ; when it is discovered, the tree is felled, and large masses of camphor, from ten to twenty pounds weight, are found at intervals in the heart of the stems.—G.

To procure camphor, the roots, wood, and branches of the *Laurus Camphora* are cut into small pieces, and put into a still with a quantity of water. When the water has boiled for forty-eight hours, the operation is considered complete, and the camphor is found adhering to the straw with which the head of the still is lined. In this state it is mixed with impurities, to free it from which, the Dutch, who import it, sublime it in glass vessels, having previously mixed it with a small portion of quicklime, to retain any empyreumatic oil which may be formed. When pure, camphor is white, crystalline, transparent, and somewhat unctuous to the touch, brittle, but tough and elastic, so as to be pulverized with the greatest difficulty ; of an aromatic pungent bitterish taste, leaving a sensation of cold in the mouth. It has a peculiar penetrating odour, it is lighter than water, very volatile and inflammable, burning with a bright flame, without leaving any residuum. Soluble in alcohol, ether the volatile and fixed oils, the concentrated acids, and ammonia. Insoluble in the weaker acids, in the alkalies, and in water.

Camphor is a powerful stimulant, and when given in very large doses acts as a poison,

causing syncope, convulsions, and delirium; opium acts as an antidote. Camphor acts as a narcotic where opium has failed of success. It is a useful remedy in debility, in hysteria, in spasmodic affections, and in dyspepsia arising from flatulence. It is also said to correct the bad effects which are caused by an overdose of opium, mezereon, or cantharides, and it certainly often removes the disagreeable effects which sometimes follow the application of a blister. In indolent tumours, and in rheumatic affections, a liniment containing camphor in solution is often of service.

The chemical constitution of camphor does not differ essentially from that of the volatile oils, and it is generally considered to be a volatile oil in a solid form. The oils of the labiatæ are said to deposit camphor when kept for a length of time, but this is a point not yet ascertained. Camphor is converted into artificial tannin by the continued action of an excess of sulphuric acid; nitric acid converts it into a peculiar acid, to which the name of Camphoric has been given; water containing an excess of carbonic acid dissolves camphor with considerable facility. An artificial camphor is procured by the action of hydrochloric acid gas on oil of turpentine.—See article Pinus.—J. D. M.

Officinal preparations. Mistura Camphoræ, *Lond. Dub.* Emulsio Camphorata, *Edin.* Spiritus Camphoræ, *Lond. Edin. Dub.* Tinct. Camphoræ Composita, *Lond. Edin. Dub.* Acidum Acetonum Camphoratum, *Edin. Dub.* Linimentum Camphoræ, *Lond. Edin. Dub.* Linimentum Camphoræ Compositum, *Lond.*

Dosis, *a* gr. iij. to gr. x. Camphoræ ipsius; *a* ʒi. *ad* ʒij. Spiritus; *a* ℥ss. *ad* ℥iss. Emulsionis.

ANTHEMIS NOBILIS. *Chamomile.*

Class and Order, SYNGENESIA SUPERFLUA. Nat. Ord. COMPOSITÆ.

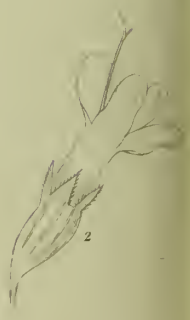
GEN. CHAR. *Involucre* hemispherical, imbricated with nearly equal scales, whose margins are membranaceous; *Receptacle* convex, chaffy; *Fruit* crowned with a membranaceous border or pappus.

Anthemis *nobilis*; leaves bipinnatifid, acute, fleshy, dotted, somewhat hairy; stem prostrate; scales of the receptacle prominent, sharp-pointed.

A. nobilis, *Lin. Sp. Pl.* 1260. *Fl. Brit.* ii. p. 904. *Engl. Bot.* xiv. t. 980. *Woodville, Med. Bot.* ii. p. 283, t. 103. *Hooker, Br. Fl.* p. 366.

ROOT perennial, frequently extending a foot or more on the surface of the ground, and throwing out fibres at distant parts, and these mostly from where the root is enlarged, and annularly jointed; stems six to ten inches long, trailing, and furrowed, which renders the

Anthemis nobilis



Mentha piperita.

stalks angular; lower leaves one or two inches long, with bi or tripinnate leaflets, which are nearly round; the leaves growing near the flower smaller,—often of only three divisions or pinnulæ; flowers terminal, white, but not unfrequently composed of florets without the exterior petals or rays.

Chamomile is found wild in many parts of Great Britain, but mostly in the vicinity of gardens or amongst rubbish, which renders it doubtful whether it is indigenous to this country. It is cultivated in great quantities for medical purposes; and a variety with double flowers has, to a considerable extent, supplanted the common sort; it has a more showy appearance, but is very inferior to the common chamomile,—its redundancy of petals by no means compensating for the loss of the fleshy receptacle, in which the particular virtue of the plant is said to reside; the common sort is denominated Scotch, and the double variety English, chamomile. When intended for infusion, the flowers are to be preferred, but for all purposes of fomentation, the stems, leaves, and flowers, are of equal value. It is a hardy perennial of easy culture, which will grow in the most sterile soils, and is then more strongly impregnated with its peculiar aroma, than when in richer soils, where it attains to a larger size, and its flowers alter their appearance by producing almost exclusively petaloid florets, when the receptacle becomes much flattened, and loses a large portion of its fragrance. I have found it in patches growing on the banks of the Water of Leith from Juniper Green to Currie.—G.

Chamomile flowers are a very common and excellent remedy, and are often used with advantage in flatulent hysteric affections, and in cases where simple bitters and tonics are indicated. They contain bitter extractive and essential oil. Their tonic properties may be with plausibility attributed to the former, and their antispasmodic and carminative properties to the latter. The infusion, or chamomile tea, as it is called, is the best form of administering it. When given in very large doses, it causes vomiting, and it is a very common emetic among the country people.—J. D. M.

Officinal. Flores.

Officinal preparations. Extractum Anthemidis, *Lond. Edin.* Infusum Anthemidis, *Lond.* Decoctum Anthemidis Nobilis, *Edin. Dub.* Oleum Volatile Anthemidis, *Lond.*

Dosis, *a* ʒss. *ad* ʒi. Florum in Pulvere; *a* gr. x. *ad* ʒss. Extracti; *a* ℥ss. *ad* ℥ij. Infusi; *a* gtt. v. *ad* gtt. x. Olei.

MENTHA PIPERITA. Peppermint.

Class and Order, DIDYNAMIA GYMNOSPERMIA. Nat. Ord. LABIATÆ.

GEN. CHAR. *Calix* equal, five-toothed; mouth naked or rarely villous; *Corolla* nearly regular, of four segments; *Tube* very short; *Stamens* distant, protruding or included; *Filaments* naked; *Anthers* with two parallel cells.

PLATE 43.

Mentha *piperita ;* leaves ovate lanceolate, strongly serrated, acute, slightly hairy, stalked; spikes interrupted ; bracteas lanceolate ; calix glandular, quite glabrous at the base.

M. piperita, *Fl. Brit.* ii. p. 613. *Engl. Bot.* t. 687. *Woodville, Med. Bot.* iii. p. 461. *Hooker, Br. Fl.* p. 271.

Root perennial, creeping, fibrous ; stems erect, quadrangular, striated, branched at the top, rising from one to two feet in height ; leaves sharply serrated, of a full green, opposite ; flowers small, in dense clusters, growing in interrupted spikes.

The Peppermint grows naturally in watery places, and is met with in many parts of England, but from its creeping roots, is likely to be an outcast from gardens. It is subject to considerable variety in the shape, and greater or less hairiness of its leaves ; in dry exposed situations it becomes covered with a close soft pubescence, but in moist situations, is sparingly furnished with hairs, and those principally on the veins of the leaves. The Mints are numerous, but, from their varying in their appearance, the species are by no means easily determined ; fifty-two species and six varieties are mentioned in Loudon ; thirteen are natives of Britain.—G.

Peppermint has a strong, rather agreeable odour, and a pungent aromatic taste. Its virtues reside in an essential oil of a pale yellowish-green colour, which is procured from it by distillation, in the proportion of about three and a-half ounces from twenty-five pounds of the fresh plant. In doses of from three to five drops, the oil is much used as a carminative. The distilled water and spirit are also given for the same purpose, and are very useful remedies in flatulence and anorexia, arising from loss of tone in the stomach. The oil forms a valuable addition to various purgative medicines, as it prevents griping. I found it beneficial in cholera, as it frequently remained on the stomach when no other stimulant was retained.

It is composed of a fluid and solid oil, considered by some chemists as a variety of camphor. According to Giese, no *stearoptêne* is obtained when the plant is collected before the flowers appear, nor when it is distilled in the fresh state.* Prout regards the *stearoptêne* of this oil as identical with camphor.—J. D. M.

Officinal. Herba.

Officinal preparations. Oleum Volatile Menthæ Piperitæ, *Lond. Edin. Dub.* Aqua Stillata Menthæ Piperitæ, *Lond. Edin. Dub.* Spiritus Menthæ Piperitæ, *Lond. Edin.*

Dosis, *a* gtt. iii. *ad* x. Olei Volatilis; et *ab* ℥i. *ad* ℥iv. Aquæ Stillatæ; *a* ℥ss. *ad* ℥i. Spiritus.

Reference to Plate 43.

Fig. 1. Calix; Fig. 2. Flower; both magnified.

* Berzelius, Traité de Chimie, vi. 417.

MENTHA VIRIDIS. Spearmint.

Class and Order, Nat. Ord. and Generic Character, see *M. piperita.*

Mentha *viridis;* leaves lanceolate, acute, glabrous, serrated, sessile; spikes interrupted; bracteas setaceous, as well as the calix; and somewhat hairy, pedicles glabrous.

M. viridis, *Lin. Sp. Pl.* p. 804. *Smith, Fl. Brit.* ii. p. 612. *Woodville, Med. Bot.* iii. p. 463. *Hooker, Br. Fl.* p. 269.

Root perennial, creeping, fibrous; stems erect, quadrangular; leaves longer than the preceding, and of brighter and paler colour; flowers purple, like those of the peppermint, which the whole plant much resembles, excepting in the length of its foliage. Found wild in similar situations with the peppermint, and is often the outcast of gardens; both this and the preceding species are cultivated to a considerable extent in various parts of England.—G.

The *Mentha viridis* is seldom used medicinally. It yields a volatile oil resembling that of peppermint, but less agreeable. A distilled water is also prepared from it, but it is little used. For culinary purposes this mint is generally selected.—J. D. M.

Officinal. Herba.

Officinal preparations. Oleum Volatile Menthæ Viridis, *Lond. Dub.* Aqua Stillata Menthæ Viridis, *Lond. Dub.* Infusum Menthæ Viridis Compositum, *Dub.* Spiritus Menthæ Viridis, *Lond.*

Dosis, *a* gtt. iii. *ad* viii. Olei Volatilis; *ab* ℥i. *ad* ℥iv. Aquæ Stillatæ; *ab* ℥i. *ad* ii. Infusi Compositi; *a* ℥ss. *ad* ℥i. Spiritus.

MENTHA PULEGIUM. Penny-royal.

Class and Order, Nat. Ord. and Generic Character, see *M. piperita.*

Mentha *Pulegium*; flowers in whorls, leaves ovate, downy, obtuse, subcrenate; stem prostrate; flower-stalks slightly, calix very pubescent; teeth of the latter fringed.

M. Pulegium, *Lin. Sp. Pl.* 807. *Woodville, Med. Bot.* iii. p. 466. *Fl. Brit.* ii. p. 625. *Engl. Bot.* t. 1026. *Hooker, Br. Fl.* p. 271.

Penny-royal is the smallest of the family of mints; it is met with in many parts of England, usually in wet and marshy places, but is rare in Scotland, if at all found wild in that

country. Root perennial, creeping, fibrous; stems prostrate, less quadrangular than the two preceding species; leaves obtuse, frequently recurved; flowers in whorls; the whole plant has a powerful odour.—G.

Penny-royal is the most disagreeable of the mints. It contains essential oil, and may be used for all the purposes for which peppermint is usually employed.

Officinal. Herba.

Officinal preparations. Oleum Volatile Menthæ Pulegii, *Lond. Dub.* Aqua Distillata Menthæ Pulegii, *Lond. Edin. Dub.* Spiritus Menthæ Pulegii, *Lond.*

Dosis, *a* gtt. iii. *ad* viii. Olei Volatilis; *a* ℥ss. *ad* ʒi. Spiritus; *ab* ʒi. *ad* ʒiv. Aquæ Distillatæ.

ANTHEMIS PYRETHRUM. *Pellitory of Spain.*

Class and Order, Nat. Order, and Generic Character, see *A. nobilis*, p. 222.

Anthemis *pyrethrum;* Stems decumbent; branches axillary, hairy, one-flowered; leaves tripinnate; leaflets linear.

A. pyrethrum, *Lin. Sp. Pl.* 1262. *Woodville, Med. Bot.* ii. p. 286. *Bot. Mag.* t. 462.

A hardy perennial of easy culture, and very ornamental in the flower border; it is a native of the south of Europe, and has been cultivated in Britain since 1570. The root is long, descending a foot or more, with lateral branches and fibres; leaves resembling those of chamomile but smaller; stems procumbent, about a foot long, with but few lateral ones; each is terminated with a large white flower, with the florets of the centre of a golden yellow; the back of each of the exterior flowers or rays with a purple stripe in the middle, and a yellow tinge at the base. The root, which is the drug of the shops, should be well dried, perfectly free from mouldiness, and of a pale brown colour; when held in the mouth a short time produces a burning sensation, which is not speedily removed.—G.

The root of the *Anthemis pyrethrum* is used as a sialagogue; when chewed it creates a feeling of coldness, accompanied by a prickly sensation, and a very much increased flow of saliva. It is much used in toothach, which it occasionally relieves. According to John of Berlin, it contains volatile oil, which is nearly inodorous; soft and acrid resin, 1.7; bitter extract, 11.7; gum, 20.0; inuline, 40.0; woody fibre, containing extractive soluble in potass, 25.0; water, 1.6. * The soft resin is the active part.—J. D. M.

Officinal. Radix.

* Berzelius, Traité de Chimie, vi. 173.

HUMULUS LUPULUS. Common Hop.

Class and Order, DIŒCIA PENTANDRIA. Nat. Ord. URTICEÆ.

GEN. CHAR. Barren flower: *Perianth* of five leaves; *Anthers* with two pores at the extremity.

Fertile flower: *Scales* of the catkin large, persistent, concave, entire, single-flowered; *Perianth* wanting; *Styles* two; *Seed* one.

H. lupulus, *Lin. Sp. Pl.* 1457. *Smith, Fl. Brit.* iii. p. 1077. *Engl. Bot.* t. 427. *Hooker, Br. Fl.* p. 436.

THOUGH often met with in a wild state, it is doubtful if the Hop be a native of Britain, but it has long enjoyed a place in our Floras; in numerous parts of the kingdom it is met with growing luxuriantly in hedge-rows and coppices; but as it was more diffusedly cultivated before it became an exciseable article, it has probably been thrown out from gardens. In Kent, Sussex, Essex, and other parts of England, the hop is grown to a great extent, but does not appear to answer the purpose of the grower farther north than the southern borders of Yorkshire.

The hop is a perennial, climbing, herbaceous plant; stems long, weak and scabrous; leaves on footstalks, three or five-lobed, deeply serrated, veiny and rough; flowers yellowish-green; fertile flowers resembling a pine-cone. This is the only known species.

The principal purpose to which hops are applied is in the manufacture of beer. Hopsare among the most precarious crops the agriculturist has to do with,and it is calculated that every fifth year is an entire failure; the produce varies from two or three to twenty or twenty-five hundred-weight on the acre; the medium is accounted a remunerating crop. The plants require a deep rich well-manured soil; in some parts of the kingdom old woollen rags, blankets, and carpets, are used as manure, being ploughed in between the rows. In forming a hop plantation the ground requires to be well-cleared, and trenched deep either with the plough or spade, the young plants or sets are placed in a circle, six or seven in a patch, and the rows require to be at least six feet apart; there is but little produce till after the third year, when they come into full-bearing, and continue for twelve or fifteen years; the plantation requires constant attention, from the time the shoots emerge from the ground, until after the harvesting of the hops; as soon as the shoots appear they are secured to poles, which, for the first two years, are from six to eight feet high, but the next

season they are supplied with poles fourteen or sixteen feet in length; and it is generally remarked, that, unless the hop-bine attains to the height of the poles by midsummer, a failure usually ensues; the plants are subject to injury from various insects, particularly from what is termed the fly, which commits its ravages so rapidly that a healthy plantation will in a short time after the appearance of this insect have all the indication of a premature winter; the leaves shrivel and become brown, and it but rarely happens that the plants recover.

The hop ripens about the end of August, or beginning of September, and being dried in a kiln similar to that used in malting, are packed in large sacks; the best kinds are put into smaller packages of a finer texture called pockets, which contain from one hundred to one hundred and thirty pounds each, but the bulk are packed in large coarse sacks, called bags, which will contain about three hundred weight.

The young shoots of the hop are by some used as a substitute for asparagus; these are seldom taken but from the roots of the first or second year's planting.—G.

The hop was at one time supposed to possess valuable narcotic properties, but the expectations of many on this head have been disappointed, and, as Dr A. T. Thomson says, "it can only be regarded as a pleasant bitter; the best mode of exhibiting it is in well-brewed beer; the Lupulin is a weak narcotic." * *Lupulin*, as it has been called, is a compound of wax, tannin, bitter extractive, and volatile oil; and has therefore no pretensions to be called by the name *Lupulin*, which indicates that it is an active and distinct principle. Hops are supposed to render malt liquors less injurious, and they certainly retard the acetous fermentation, and consequently cause it to keep much longer than it would otherwise do. All malt liquor intended for exportation to warm climates is more highly hopped than that which is brewed for home consumption. Lupulin is procured by sifting the dry hops; it has been examined very minutely by Rayer, Chevallier and Pelletier, who have found a peculiar substance, to which they have given the name of Lupulia.—J. D. M.

Officinal. Strobili Siccati.

Officinal preparations. Extractum Humuli, *Lond.* Tinctura Humuli Lupuli, *Lond. Edin.*

Dosis, *a* gr. v. *ad* ℈i. Extracti; *a* gtt. xxx. *ad* ʒiss. Tinctura.

* Berzelius, Traité de Chimie, vi. 325.

POLYGALA SENEGA. Rattlesnake Root.

Class and Order, DIADELPHIA OCTANDRIA. Nat. Ord. POLYGALEÆ.

GEN. CHAR. *Calix* of five leaves, two of them wing-shaped and coloured; *Petals* combined by their claws with the filaments, the lower one keeled; *Capsule* compressed; *Seed* downy, crested at the hilum.

Polygala *Senega;* leaves alternate, lanceolate; stem erect, simple, leafy; spike terminal, slender; flowers alternate, beardless.

P. senega, *Lin. Sp. Pl.* 990. *Woodville, Med. Bot.* ii. p. 253. *Bot. Mag.* t. 1051.

THIS species of Milkwort is common to most parts of North America, and, probably from the circumstance of its knotty root having some resemblance to the tail of the rattlesnake, may have induced the belief in its efficacy as a cure for the venom of that animal. It varies from white to rose-colour in its flowers; and having long been in cultivation, several varieties are mentioned, originating from the different modes of culture; it is a hardy perennial plant of ready growth, and was introduced into this country in 1736. Decandolle enumerates more than one hundred and sixty species; one, *P. vulgaris*, is a native of Britain, and a second species, *P. amara*, has recently been found, but the specimens I have seen of this last kind I suspect to be only large grown plants of *vulgaris;* they both possess a peculiar taste, resembling the *Senega*, but are more bitter; the *vulgaris* varies with white, red, purple and blue flowers.—G.

Rattlesnake root is stimulant, diuretic, and expectorant, and is well adapted for the treatment of chronic catarrh, asthma, and hydrothorax. In Germany it is used as an internal remedy in ophthalmia.* In America it is much extolled as an antidote to the poison of various reptiles, particularly of the rattlesnake. It is not extensively used in Britain, but some practitioners are very partial to it, and prescribe it as an adjunct in many chronic diseases. When inflammatory symptoms are acute, the stimulating properties of this plant render it unsafe. Gehlen has found the following substances in this root, soft resin, 7.5; a particular substance to which he has given the name of *Senegine*, 6.15; sweetish extractive, having some acridity, 26.85; gum mixed with albumen, 9.5; woody fibre, 46.0;† *Senegine* is obtained by acting on the root with alcohol, by treating the alcoholic extract with ether, and by acting on that part of the extract, which the ether does not dissolve, with water. That portion insoluble in the water is *Senegine;* its taste is acrid and irritating; and it appears to be the active part of the Polygala.—J. D. M.

Officinal. Radix.

Officinal preparation. Decoctum Polygalæ Senegæ, *Lond. Edin.*

Dosis, *a* gr. xx. *ad* ℈ij. Radicis; *a* ʒss. *ad* ʒij. Decocti.

* Richard, Hist. Nat. Med. ii. 762.

† Berzelius, Traité de Chimie, vi. 202.

HÆMATOXYLON CAMPECHIANUM. Logwood.

Class and Order, DECANDRIA MONOGYNIA. Nat. Ord. LEGUMINOSÆ.

GEN. CHAR. *Calix* five-parted; *Petals* five; *Capsule* lanceolate, one-celled, two-valved; *Valves* boat-shaped.

Hæmatoxylon *campechianum*, *Willd. Sp. Pl.* ii. p. 547. *Woodville, Med. Bot.* i. p. 48.

THIS tree, which produces the logwood of commerce, is the only known species. It is a native of South America, growing abundantly in the Bay of Campeachy, from whence it derives its specific name. It forms a low tree; stem crooked; leaves abruptly pinnate; flowers pale-yellow.

Logwood is one of our most valuable dyes, and is used for staining woods, which it dyes nearly black, with the addition of salts of iron. Introduced into Britain in 1724.—G.

Logwood is occasionally prescribed with advantage in chronic diarrhœa, but it is principally valuable as a dye. According to Chevreul, it contains a peculiar colouring matter, (*Hematine*); a resinous or oily substance soluble in alcohol; acetic acid; salts of lime and potass with the vegetable acids; sulphate and oxalate of lime; oxide of iron and manganese; aluminum. *Hematine* is obtained by digesting the watery extract in alcohol of sp. gr. 843. The alcohol is then filtered and evaporated to the consistence of syrup, a little water is added, by which the formation of crystals is accelerated; when pure, it crystallizes in small transparent tabular crystals of a yellowish-red colour, and a somewhat austere acrid taste. It is soluble in alcohol and ether, forming yellowish-red solutions. 1000 parts of water dissolve one of hematine, and acquire a brownish-red colour. The acids render the colour of its solutions brighter, but less intense. The alkalies unite with it, and form definite compounds of a bluish or purple colour. * It unites with the metallic oxides, and variously-coloured combinations result.—J. D. M.

Officinal. Lignum.

Officinal preparations. Extractum Hæmatoxyli Campechiani, *Lond.*

Dosis, *a* ℈ j. *ad* ʒi. Extracti.

* Berzelius, Traité de Chimie, vi. 15.

RHUS Toxicodendron. Sumach or Poison-Oak.

Class and Order, Pentandria Trigynia. Nat. Ord. Anacardiaceæ.

Gen. Char. *Calix* five-parted; *Petals* five; *Berry* one-seeded.

Rhus *Toxicodendron;* diœcious; stem rooting; leaves ternate.

R. Toxicodendron, *Lin. Sp. Pl.* 381. *Bot. Mag.* t. 1806.

This is an exceedingly poisonous plant, and its poison is not only communicated by touching or smelling it, but affects some persons who approach near the tree; to others it is innoxious. It is a native of North America, and was introduced into this country in 1640.

Stem trailing, or, when supported, climbing in the manner of ivy; leaves alternate; leaflets three, of a deep shining green; flowers axillary, in short racemes, of a pale greenish-white; berries whitish; seeds colourless, hard, or bony. Different species of this genus yield a viscid juice, which is highly poisonous, but at the same time very useful, as affording some of the most valuable varnishes,—particularly *R. vernix*, with which the Japanese varnish all their wooden utensils, as well as their doors and windows; and it is from this circumstance, and the best varnish being procured from that country, that we have the common term Japan, as expressing something varnished in a high degree.

All the species are possessed of such dangerous properties that they should be approached or handled with much caution, as many instances have occurred of serious inconvenience from merely taking a leaf into the hand. Loudon enumerates eighty-one species and ten varieties.—G.

The *Rhus Toxicodendron* is a virulent, acrid, poison. The gas which it exhales while growing is sufficiently impregnated with its deleterious properties to cause in some particular constitutions very unpleasant, and even dangerous symptoms. "Calm relates, that of two sisters, one could manage the tree without being affected by its venom, whilst the other felt its exhalations as soon as she came within a yard of it, or even when she stood to leeward of it at a greater distance; that it had not the least effect upon him, though he made many experiments on it, and though the juice once squirted into his eye; but that, on another person's hand, which he covered very thick with it, the skin, in a few hours after, became as a piece of tanned leather, and peeled off afterwards in scales." * According to Van Mons of Brussels, the gas which this plant exhales is carburetted hydrogen, holding a deleterious volatile principle. When examined during the day, this plant yields an innoxious watery fluid and nitrogen. It is only after sunset that the carburetted hydro-

* Loudon, Encycop. of Plants, 226.

gen and the deleterious principle are evolved.* Orfila tried the effects of the poison on dogs, and he has placed it among the acrids; he observed that the stomach and intestinal canal were much inflamed in the animals poisoned by it. Dufresnoy introduced this remedy is cases of inveterate scabies and in epilepsy. He gave the extract in doses of from fifteen to twenty grains, two or three times a-day, with occasional success. Dr Brera gave the powdered leaves of the *R. radicans*, a much more virulent species, in doses of the fourteenth part of a grain every four hours with marked success in paralysis. Dr Duncan tried the leaves of the *R. Toxicodendron* in paralysis, but did not succeed in curing the disease. The medicine took effect so far as to cause pricking and tingling in the limbs of the patient.†—J. D. M.

Officinal. Folia.
Dosis, *a* gr. ss. *ad* gr. iv.

GENTIANA LUTEA. Yellow Gentian.

Class and Order, PENTANDRIA DIGYNIA. Nat. Ord. GENTIANEÆ.

GEN. CHAR. *Calix* four or five-cleft; *Corolla* sub-campanulate, funnel or salver-shaped, tubular at the base, destitute of nectariferous glands.

Gentiana *lutea;* corolla five-cleft, rotate, whorled; whorls cymose; leaves broad, ovate, channelled.

G. lutea, *Lin. Sp. Pl.* 329. *Woodville, Med. Bot.* iii. p. 433.

ALL the species of Gentian are intensely bitter. The present species is the one in common use,—its size rendering it more attainable than some other species. It is a native of Germany, Switzerland, and other parts of Europe, and thrives well in Britain. Roots perennial, penetrating deep into the earth, thick, fleshy; stems herbaceous, rising to three or more feet high, and having a profusion of thickly-clustered flowers, which grow in whorls, of a yellow colour; leaves large, boat-shaped, and deeply channelled. This is a handsome herbaceous plant, and merits a place in every garden. It is of easy cultivation, and bears transplanting and dividing better than some other kinds.

The various individuals composing the natural family of gentianæ are bitter, and febrifuge. The purest bitter I have met with is furnished by the *Gentiana Chirayita*, which is used as a stomachick in the East Indies.—G.

Gentian is one of the purest and best bitters in the pharmacopœia, and is useful in all

* Richard, Hist. Nat. Med. ii. 548. † Duncan's Dispensatory, 458.

cases where tonic bitters are indicated. In dyspepsia it is valuable either alone or combined with other bitters or with astringents, or aromatics. It raises the pulse, increases the appetite, and in some cases acts as an emmenagogue. Henry and Caventou have analyzed gentian, and have found a very volatile substance; a crystalline bitter principle, to which the name of *gentianine* has been given; a green fatty matter; uncrystallizable sugar; gum; a brown extract; and woody fibre. *Gentianine* is thus procured. An ethereal tincture is formed, and distilled to the consistence of syrup; when cold a crystalline mass is left; this is acted on by strong alcohol, which dissolves the *gentianine*, along with a substance to which the name of glue is given. When the alcoholic solution is evaporated, and allowed to cool, the *gentianine* is deposited in a crystalline form, though not in a state of perfect purity. It is the active principle of the root, and is very soluble in water and in alcohol, but not so soluble in ether. The process above given does not seem very well adapted for the economical preparation of this substance.—J. D. M.

Officinal. Radix.

Officinal preparations. Infusum Gentianæ Compositum, *Lond. Edin. Dub.* Tinctura Gentianæ Composita, *Lond. Edin. Dub.* Extractum Gentianæ, *Lond. Edin. Dub.* Vinum Gentianæ Compositum, *Edin.*

Dosis, *ab* ℥i *ad* ℥ij. Infusi Compositi; *a* ʒi. *ad* ʒss. Tincturæ Compositæ; *a* gr. x. *ad* gr. xxv. Extracti; et *a* ℥ss. *ad* ℥iss. Vini.

AMYGDALUS COMMUNIS. *Almond*

Class and Order, ICOSANDRIA MONOGYNIA. Nat. Ord. ROSACEÆ.

GEN. CHAR. *Calix* of five segments, inferior; *Petals* five; *Drupe* containing a perforated nut.

Amygdalus *communis;* leaves having the lower serratures glandulous; flowers sessile, growing in pairs.

A. communis, *Lin. Sp. Pl.* 677. *Woodville, Med. Bot.* ii. p. 230. t. 83.

A. communis, *β. amara. Bitter almond.*

THE tree producing the almond is highly ornamental, and well merits a place in all shrubberies and pleasure grounds; it forms a low tree, and early in the year produces a profusion of flowers. Both varieties, the *dulcis* and *amara*, are natives of Barbary, and the islands in the Mediterranean Sea, and are cultivated for the markets in the South of France, Italy, Spain, and the Levant. The best sweet or Jordan almonds are imported from Malaga, and the bitter ones from Mogadore. In France numerous varieties are cul-

tivated; in England we rarely meet with any but the two above named, and the most beautiful variety, the double blossomed kind.—G.

The kernel of the almond nut is demulcent, nutritive, and oleaginous. A bland fixed oil applicable to many domestic and pharmaceutic purposes is obtained from it by pressure. The bitter almond, which is only a variety of the sweet, contains a mucilaginous, albuminous solid matter, like the sweet almond, but it also yields with water a highly poisonous volatile oil, of a pleasant aromatic odour, and a warm biting taste. Its poisonous properties are owing to the presence of hydrocyanic acid, but the smell is quite independent of this acid, and belongs to the essential oil, which is not poisonous.

Many accidents have happened from custards and puddings being too highly flavoured with the essential oil, and biscuits made with bitter almonds often produce unpleasant symptoms. The late Professor Gregory suffered an attack of urticaria, after eating any thing into which bitter almonds had been put. MM. Robiquet and Charlard have proved that some chemists have found that the essential oil is not formed unless the pulp be moistened with water, and that it cannot be extracted by alcohol or ether.*—J. D. M.

Officinal. Nuclei.

Officinal preparations. Oleum Amygdalæ, *Lond. Edin. Dub.* Mistura Amygdalæ, *Lond. Edin. Dub.* Emulsio Arabica, *Edin. Dub.* Emulsio Camphorata, Confectio Amygdalæ.

Dosis, *ab* ℥ss. *ad* ʒi. Olei Amygdalæ fixi; *a* lb. i. *ad* lb. ij. Emulsionis; *a* ʒi. *ad* ℥ss. Confectionis.

SCILLA MARITIMA. *Officinal Squill.*

Class and Order, HEXANDRIA MONOGYNIA. Nat. Ord. ASPHODELEÆ.

GEN. CHAR. *Perianth* inferior, of six petaloid, spreading, deciduous leaves; *Filaments* filiform, glabrous, inserted at the base of the perianth.

Scilla *maritima;* flowers without leaves; bracteas reflexed.

S. maritima, *Lin. Sp. Pl.* 442. *Woodville, Med. Bot.* ii. p. 322. *Annals of Bot.* i. p. 101.
Ornithogalum Squilla, *Bot. Mag.* t. 918.

THIS species, which has been arranged by authors either in the genus *Scilla* or *Ornithogalum*, grows abundantly on the sandy hills of Spain and Portugal, and though occasionally found on the *shores* of France, Spain, Portugal, Italy, and of the Mediterranean generally, yet, as remarked by Professor Link, in *Annals of Botany*, "the name of *maritima* is not quite

* Christison on Poisons, 678.

proper, for the plant is seldom met with near the sea-shore, and sometimes very remote from it, as, for instance, at the foot of the Estrella mountains, which are at about one hundred miles from the sea."

Bulb large, tunicated, five or six inches in diameter, pear-shaped, from which in the month of May issues the flowering stem, in length from two to three feet, bearing at its extremity a long dense spike of dirty-white flowers, having a purple stripe along the under side; the leaves appear towards the close of summer, are a foot to eighteen inches long, pretty numerous, and generally waved at the edges. It has been cultivated in this country since 1699, but requires the shelter of a garden frame. The bulbs are very tenacious of life; the late Dr Duncan showed me one which produced a flowering stem a year after it had been deposited in a case of the Materia Medica museum, and the following year the same plant made a fresh attempt at vegetating, some leaves having made their appearance on the crown of the bulb; but it had not sufficient vigour to bring them to perfection. The most energetic of the recent bulbs are of a purple hue, which disappears if long kept; when wanted for use the whole of the exterior tunics that are dry should be removed as useless. The root is either dried whole, or cut into slices and dried, which is best done by artificial heat, as though the root loses the greater portion of its weight, what is evaporated appears to be an almost tasteless watery fluid. If exposed to the air after being dried it absorbs moisture, and soon becomes mouldy, and should be kept in closely-stopped bottles.—G.

Squill is an excellent expectorant and diuretic when given in small doses; in large doses it acts as an emetic, and is apt to cause strangury. It is a general stimulant, and when combined with calomel acts chiefly on the kidneys. It is useful in chronic catarrh, asthma, and dropsy. Its taste is bitter and nauseous, and all the liquid preparations are more or less unpleasant. The most agreeable form in which it can be administered is that of pill. Squills owe their activity to a principle discovered by Vogel, *Scillitine*, but which he did not procure in a state of purity. Tilloy gives the following process for preparing it. He digests the dried root in strong alcohol, and evaporates the tincture thus formed to the consistence of syrup, then adds alcohol, sp. gr. 842; this leaves some extractive matter undissolved; he then pours off the alcoholic solution, and evaporates to the consistence of extract; and acts upon this with ether, which dissolves a fatty acid, and leaves the *Scillitine*, a grain of which is sufficient to kill a strong dog.—J. D. M.

Officinal. Radix.

Officinal preparations. Tinctura Scillæ Maritimæ, *Lond. Dub.* Acetum Scillæ Maritimæ, *Lond. Edin. Dub.* Syrupus Scillæ, *Edin.* Pilulæ Scillæ compositæ, *Lond. Edin. Dub.* Oxymel Scillæ, *Lond. Dub.* Pulvis Scillæ, *Edin. Dub.*

Dosis, *a* gr. i. *ad* iij; *a* ʒi. *ad* ʒiss. Oxymellis et Aceti; *a* gtt. x. *ad* gtt. xx. Tincturæ; *a* gr. x. *ad* ℈i. Pilularum; *a* ʒi. *ad* ʒiii. Syrupi.

STALAGMITES Cambogioides.

Class and Order, Polygamia Monogynia. Nat. Ord. Guttiferæ.

Gen. Char. *Calix* four or six-leaved; *Flowers* of four or six petals; *Stamens* about thirty, inserted on a fleshy receptacle; *Style* thick; *Stigma* four-lobed; *Berry* one-celled, crowned by the persistent style.

Stalagmites *Cambogioides*, *Willd. Sp. Pl.* iv. p. 980.

S. cambogia, *Persoon, Syn.* ii. p. 68.

The only known species.—G.

GARCINIA Cambogia.

Class and Order Dodecandria Monogynia. Nat. Ord. Guttiferæ.

Gen. Char, *Calix* four-leaved; *Petals* four; *Berry* eight-seeded, crowned by the peltate *Stigma.*

Garcinia *Cambogia;* leaves elliptical, pointed at both ends; stigma eight or ten-lobed; fruit furrowed.

G. Cambogia, *Willd. Sp. Pl.* ii. p. 848. *Persoon, Syn.* ii. p. 3.

The above named plants are supposed to yield the gamboge of commerce, but the sources from whence the drug is obtained are so doubtful, that it is with some hesitation I particularize any as producing the officinal drug. By the British colleges the well-known pigment Gamboge or Camboge, is stated to be the production of *Stalagmites Cambogioides*, which is a native of the East Indies, and is said to grow in abundance on the banks of the river Kambogia, whence its name. A somewhat similar substance is obtained from the *Garcinia cambogia*, a tree found on the coast of Malabar; and a considerable variety of plants in the East Indies abound in a yellow fluid which hardens on exposure, and is indiscriminately known to druggists as Gamboge.

Numerous species yield a gamboge-like substance, and it may hereafter prove that many, if not most, plants whose natural juices are of the camboge colour, are possessed of similar properties. Our native species which abound in this kind of juice are the *Glaucium luteum*,

and *Chelidonium majus*, but I have not had an opportunity of examining either, for the purpose of ascertaining their qualities.

Gamboge when fine is of a dark yellow in mass, if moistened a bright yellow, and reduced to powder it is of a full golden yellow inclining to orange; it has a sickly unpleasant odour, and on handling adheres to the fingers; it is usually imported in rolls or flat cakes, and often contains seeds, leaves, pieces of stick, and other impurities.

I have often found on looking over large quantities of the drug, pieces having a clear resinous appearance, of a very dark colour, and a glassy fracture; these on being pulverized and ground on a slab with water, produce an opaque and very brilliant yellow colour, but if merely immersed in water are perfectly immiscible. On examining some specimens of the drug obtained from the *Stalagmitis cambogioides* of Ceylon, in the Materia Medica museum, I selected some small semitransparent grains, which on grinding with water produced a yellow equal in intensity to gall-stone; but this, as well as the resinous kind above alluded to, becomes turbid when mixed with Prussian blue, and forms a dull olive green.—G.

Camboge is a drastic purgative, and was long used as a vermifuge, particularly in tænia, but for the latter purpose it has yielded to oil of turpentine. It is still used occasionally, and acts well in cases of obstinate constipation. Braconnot found it to consist of 80 parts of yellow resin and 19 of gum, and 0.5 of impurities. John found 89 of resin, and $10\frac{1}{2}$ of gum. Alcohol dissolves the resin, but a portion of the gum adheres to it; to procure it in a state of purity, we must have recourse to ether, which dissolves the resin alone, and from which it may be obtained by evaporation. It is of a purplish red colour when in mass, but becomes yellow on being pounded; it has neither smell nor taste. It is soluble in the alkalies, and insoluble in the acids. It combines with the metallic oxides, with some of which it forms very brilliant colours. Water does not dissolve camboge, but when triturated with it, a permanent emulsion of a bright yellow colour is formed.—J. D. M.

Officinal. Gummi-Resina.

Officinal preparations. Pilulæ Cambogiæ Compositæ, *Lond.*

Dosis, *a* gr. ij. *ad* gr. vi. Gummi-Resinæ; *a* gr. x. *ad* ℈i. Pilularum.

SALIX CAPREA. *Great Round-Leaved Sallow.*

Class and Order, DIŒCIA DIANDRIA. Nat. Ord. SALICINEÆ.

GEN. CHAR. Barren flower: *Scales* of the catkin single-flowered, imbricated, with a nectariferous gland at the base; *Perianth* wanting; *Stamens* one to five.

Fertile flower: *Scales* of the catkin single-flowered, imbricated, with a nectariferous gland; *Perianth* wanting; *Stigmas* two, often cleft; *Capsule* one-celled, two-valved, many-seeded; *Seeds* comose.

Salix *caprea;* leaves ovate, acute, serrated and waved at the margin, downy beneath; stipules semicordate; ovary ovate, downy, on a long hairy stalk; stigmas sessile, silky, undivided.

S. caprea, *Lin. Sp. Pl.* 1448. *Engl. Bot.* t. 1488. *Hooker, Br. Fl.* p. 425.

A very abundant species throughout Britain, growing in hedges and dry banks. It has the largest leaves of any of our native species; is readily known by producing its large handsome blossoms before any of the leaves appear; it forms a moderate-sized tree, with spreading purplish slightly downy branches; in the Highlands, the bark is used for tanning leather, and the wood for a variety of agricultural purposes.

This is an intricate numerous family, the individuals of which frequently so nearly resemble each other, that it requires no small botanical acumen to distinguish the species. Dr Hooker has described sixty-six British species, but it is questionable if some of them are not merely varieties, occasioned by a difference of age or place of growth. Loudon has one hundred and sixty-seven, besides varieties. All these agree in their qualities, varying only in the degree of astringency; the leaves and stems of all contain tannin; many produce galls of equal value with those of the oak.—G.

Various species of willow are used in medicine. They all possess astringent, tonic, and febrifuge virtues, and have been proposed as substitutes for cinchona. They owe their activity to a proximate vegetable principle discovered by Leroux, and named by him *Salicine.* It is procured by making a decoction of the bark, by precipitating the gum and mucilage by acetate of lead, and by evaporation after the excess of lead has been removed by sulphuretted hydrogen. It is pretty extensively used in France as a tonic and febrifuge, and it was at one time held out as being equal to sulphate of quinine, but experience has not confirmed this statement. In this country it has not been much used.—J. D. M.

Officinal. Cortex.

Dosis, *a* ℈ii. *ad* ʒiss. Corticis; *a* gr. iii. *ad* x. Salicinæ.

QUERCUS Robur. Common British Oak.

Class and Order, Monœcia Polyandria. Nat. Ord. Cupuliferæ.

Gen. Char. Barren flower in a lax catkin or spike; *Perianth* single, five-cleft; *Stamens* five to ten.

Fertile flower: *Involucre* of many little scales, united into a cup; *Perianth* single, closely investing the germen, six-toothed; *Germen* three-celled; *Style* one; *Stigmas* three; *Nut* or *Acorn* one-celled, one-seeded, covered by the persistent, enlarged perianth, and surrounded at the base by the enlarged cup-shaped involucre.

Quercus *Robur*; leaves deciduous, stalked, oblong, sinuated, dilated upwards, smooth; nut oblong, two or three upon a long peduncle.

Q. Robur, *Lin. Sp. Pl.* 1414. *Fl. Brit.* 1026. *Engl. Bot.* t. 1342. *Hooker, Br. Fl.* 407. *Woodville, Med. Bot.* ii. t. 126.

Q. pedunculata, *Willd. Sp. Pl.*

The oak is too well known to require description. The two species natives of Britain, closely resemble each other,—differing little but in the comparative length of their fruit-stalks. The wood is hard and durable. It is of slow growth; prefers a deep strong soil, as its roots descend deep. Formerly its fruit afforded food for man, but is now rejected, and left for swine and other animals. Its bark is used for the purpose of the tanner, and the galls abounding on the petioles and leaves of several species are used for dyeing. The genus is principally confined to the temperate parts of the old and new continents. From the *Q. suber* is obtained cork, which is the exterior bark; this valuable article is stripped from the trees whilst standing, and, as another bark is beneath, the trees are not injured by the operation; the species is common to the more elevated parts of the south of Europe. Loudon names sixty-one species, and nearly the same number of varieties.—G.

Oak-bark is a powerful astringent, and is useful in stopping internal hemorrhage, or profuse discharges of blood by the mouth and rectum. Its decoction and infusion are valuable gargles in relaxations of the throat and uvula, and it has been employed as an external application to thoracic aneurism. In the arts, oak-bark is used for tanning leather; it owes this property to the quantity of tannin or gallic acid which it contains.

No correct analysis has, to my knowledge, been published. According to Berzelius, the proportions of tannin contained in oak-bark are,

	Extract.	Tannin.
In the inner bark of old oaks, -	22.5	15
——————— of young oaks, -	23.1	16
In the entire bark, - -	12.7	63 *

According to Dr Duncan, † Vauquelin has discovered a difference in the action of nut-galls and oak-bark; the nut-galls precipitating tartrate of antimony and infusion of cinchona, while the bark causes no precipitation whatever.—J. D. M.

Officinal. Cortex.

Officinal preparation. Decoctum Quercus Roboris, *Lond. Edin.*

Dosis, *ab* ʒi. *ad* ʒij. Decocti.

* Berzelius, Traité de Chimie, v. 563.

† Duncan's Dispensatory, 453.

GLYCYRRHIZA GLABRA. Common Liquorice.

Class and Order, DIADELPHIA DECANDRIA. Nat. Ord. LEGUMINOSÆ.

GEN. CHAR. *Calix* bilabiate; *Upper lip* three-cleft, lower undivided; *Legume* ovate, compressed.

Glycyrrhiza *glabra;* leaflets ovate, obtuse, terminal one on a longish stalk; flowers spiked; legumes smooth.

G. glabra, *Lin. Sp. Pl.* 1046. *Woodville, Med. Bot.* iii. p. 458.

A hardy perennial herbaceous plant, a very old inhabitant of our gardens, having been cultivated in Britain since 1562. Root long, often penetrating to the depth of four or five feet, and creeping to a considerable distance; stems, several from the same root, upright, striated, three feet or more high, with pinnated leaves; the pinnæ in six or eight pairs with a terminal one, which is on a longish footstalk; flowers in dense spikes; axillary, of a purple blue colour, diffusing when in blossom a very agreeable fragrance; legumes oblong, compressed, containing four to six kidney-shaped seeds.

The Liquorice has long been an object of cultivation in this country for the sweet juice afforded by its roots. Pontefract in Yorkshire is celebrated for it, and the juice prepared in small flat pieces, is commonly known by the name of Pomfret cakes. It is grown to a large extent in the neighbourhood of London. It requires a light deep soil, and in land of this description I have known the soil dug out to the depth of four feet, at the bottom of which is laid a thick coat of cinder ashes, which prevents the root descending deeper. The sets or cuttings of the root are planted about four inches beneath the surface, and they reach the bottom of the trench by the end of the second year. As soon as they come in contact with the ashes they cease to elongate, and expand laterally, so that the roots are often an inch or more in diameter. The third year after planting, the roots are at perfection, and should be dug up soon after the stems are decayed, when they are succulent and fit for immediate use. The larger part of that grown in Britain is used by the porter-brewers as a substitute for malt, and to contribute to that flavour so much admired in London porter.

The stems in a young state are greedily devoured by cattle. There are several other species, one, *G. echinatus*, has been found in cultivation less saccharine and juicy than the present plant.—G.

Liquorice root has an agreeable, sweet, mucilaginous taste; it is an excellent demulcent, and is said to have some expectorant qualities. It is not often prescribed in substance, and occasionally in the form of infusion or decoction. The extract, which is commonly known by the name of Liquorice, or black sugar, is not prepared by the apothecary, but is

imported chiefly from Spain and Italy. It occurs in cylindrical rolls, which are usually covered with bay leaves. The decoction of the root, or the solution of the extract, are excellent vehicles for covering the taste of nauseous drugs, and are generally palatable to children. Robiquet discovered in the liquorice root a sweet crystalline substance, to which he gave the name of *Glycyrrhizine*. This substance agrees with sugar in sweetness, but differs from it in many of its properties; it is precipitated by the acids, and forms definite compounds with them.—J. D. M.

Officinal. Radix.

Officinal preparation. Extractum Glycyrrhizæ Glabræ, *Lond. Edin. Dub.* Trochisci Glycyrrhizæ Glabræ, *Edin.* Decoctum Glycyrrhizæ Glabræ, *Dub.*

Dosis, *a* ʒij. *ad* ʒi. Extracti et Trochiscorum, indies; *a* lb. j. *ad* lb. ij. Decocti.

CUCUMIS COLOCYNTHIS. Bitter Cucumber, or Bitter Apple.

Class and Order, MONŒCIA MONADELPHIA. Nat. Ord. CUCURBITACEÆ.

GEN. CHAR. Male: *Calix* five-parted; *Corolla* of five petals; *Filaments* three.
Female: *Calix* five-parted; *Corolla* of five petals; *Pistil* three-cleft; *Seeds* with a sharp edge.

Cucumis *colocynthis;* leaves many-lobed; fruit globose; smooth.

C. colocynthis, *Lin. Sp. Pl.* 1092. *Woodville, Med. Bot.* iii. p. 476.

THIS species is abundant in Turkey, Nubia, and various parts of Africa; but the English is supplied from the Mediterranean islands. It is an annual plant, and has been cultivated in this country since 1551, and requires the same culture as the melon and cucumber. The root is fibrous, and penetrates deep into the earth; stems slender, angular, branching, rough with coarse pellucid hairs, almost spines; leaves on long footstalks, deeply cut with an indefinite number of lobes; flowers small, axillary, solitary, of a yellow colour. The female flower resembles the male, and has filaments but not anthers. The fruit is round and smooth, of the size and colour of an orange, three-celled, each containing numerous ovate, compressed seeds, enveloped in a white spongy pulp.

The dried pulp is the part used in medicine; it is white, soft and porous, of an intensely bitter taste, but the seeds imbedded in it are nearly tasteless.—G.

Colocynth is a powerfully drastic purgative, of an extremely bitter and nauseous taste

Its action is so violent, that it is seldom or never given uncombined. It frequently gives rise to tormina, and when taken in an overdose it acts as an acrid poison, and causes death by general peritonitis.

" A considerable number of severe cases of poisoning with this substance have occurred in the human subject; and a few have proved fatal. *Tulpius* notices the case of a man who was nearly carried off by profuse, bloody diarrhœa, in consequence of taking a decoction of three colocynth apples. *Orfila* relates that of a rag-picker, who, attempting to cure himself of a gonorrhœa by taking three ounces of colocynth, was seized with vomiting, acute pain in the stomach, profuse diarrhœa, dimness of sight, and slight delirium; but he recovered under the use of diluents and local blood-letting. In 1823 a coroner's inquest was held at London on the body of a woman who died in twenty-four hours with incessant vomiting and purging, in consequence of having swallowed by mistake a teaspoonful and a-half of colocynth powder. *M. Carron d' Annecy* has communicated to Orfila the details of an instructive case, which also proved fatal. The subject was a locksmith, who took from a quack two glasses of decoction of colocynth to cure hemorrhoids, and was soon after attacked with colic, purging, heat in the belly, and dryness of the throat. Afterwards the belly became tense and excessively tender, and the stools were suppressed altogether. Next morning he had also retention of urine, retraction of the testicles and priapism. On the third day the retention ceased, but the other symptoms continued, and the skin became covered with clammy sweat, which preceded his death only a few hours. The intestines were red, studded with black spots, and matted together by fibrinous matter; the usual fluid of peritonitis was effused into the belly; the villous coat of the stomach was here and there ulcerated; and the liver, kidneys, and bladder also exhibited traces of inflammation." *

When combined with aloes or scammony and some aromatic, it is one of our most valuable purgatives, and is extensively used. According to Meissner, colocynth pulp contains fixed oil, 4.2; bitter resin of a reddish-brown colour, insoluble in ether, 13.2; bitter of colocynth *(Colocynthine)* 14.4; extractive, 10.0; gum, 9.5; pectic acid, 3.0; gummy extract procured by the aid of potass, 17.6; phosphates of lime and magnesia, 5.7; vegetable fibre, 19.0; water, 5.0. According to Braconnot, the watery extract of the pulp contains the following principles: resin, 4.3; bitter of colocynth, 41.4; pectic acid, 18.6; animalized matter, 21.4; acetate of potass, 7.1; a deliquescent salt of potass, 7.1.† Colocynthine was discovered by Vauquelin. He procured it by digesting the pulp in cold water, and then boiling the cold liquid. As it boiled, oleaginous-looking drops were formed, which he separated, and which he considered as the bitter principle. Braconnot procured it by acting on the watery extract with alcohol, which dissolved the bitter principle and left the gum. Herberger has procured it in a state of perfect purity, by dissolving the alcoholic extract in cold water, by precipitating the aqueous solution by acetate of lead, and by separating the excess of lead by sulphuretted hydrogen. He then evaporated the liquid to the consistence of syrup, and added ammonia, by which numerous flakes of a lightish-yellow

* Christison on Poisons, p. 524.

† Traité de Chimié, vi. 317.

colour were thrown down. These he separated by filtration, and dissolved in alcohol. This must be considered the pure bitter of the colocynth.—J. D. M.

Officinal. Pepones.

Officinal preparations. Extractum Colocynthidis, *Lond.* Extractum Colocynthidis Compositum, *Lond. Dub.* Pilulæ Aloes c. Colocynthide, *Edin. Dub.*

Dosis, *a* gr. v. *ad* xx. Extracti; *a* gr. vii. *ad* xxv. Extracti Compositi; *a* gr. vii. *ad* xv. Pilularum.

PTEROCARPUS ERINACEUS. Kino-Tree.

Class and Order, Nat. Ord. and Generic Character, See *P. santalinus*, p. 178.

Pterocarpus *erinaceus;* leaves pinnate; leaflets alternate, elliptical, obtuse; legume with a short straight beak.

P. erinaceus, *Lamarck, Dict.* v. p. 728. *Decand. Prod.* Part ii. p. 419.

Though the present is considered the species producing the finest quality of the drug kino, the same, or a very similar substance, is afforded, not only by other species of the genus, but also by species belonging to different genera. The London College consider this species as producing kino, the Edinburgh College the *Eucalyptus resinifera*, and in the Dublin Pharmacopœia it is attributed to the *Butea frondosa.*

Each of these trees doubtless produce an analogous substance, resembling in appearance the true kino, and possessed of similar properties, as do a variety of others. Their concrete juices are of a deep-red colour, powerfully astringent, and vary, the one from the other, in their greater or less brilliancy of colour.

The present is a low tree, with a tortuous stem, covered with ash-coloured bark; leaves deciduous; flowers numerous, yellow, on short curved pedicels, with a pair of small lanceolate bracteas at the base of each; fruit a compressed orbicular pod, with a leaf-like margin, containing a single kidney-shaped seed. It is a native of Senegal, from whence specimens were transmitted to Europe by the enterprising Mungo Park. The drug is procured by wounding the tree. "The juice is at first very fluid and pale-coloured, but, as it concretes, becomes of a deep blood-red, and is finally so brittle that its collection is attended with some difficulty."—G.

A good deal of discrepancy of opinion exists as to the sources from which kino is procured. "The kino," says Dr Thomson, "originally introduced into the pale of the Materia Medica of the British colleges, came from Africa; and, from a specimen sent home by Mungo Park, it has been ascertained to be the juice of a species of Pterocarpus, which De-

candolle has described in the Encyclopédie Methodique under the specific name *Erinacea*. The London College, overlooking the fact, that scarcely any of this kind of kino is now found in the market, has designated this plant in their pharmacopœia as the only source of kino. The Edinburgh College has put down kino as the production of the *Eucalyptus reinifera*, a tree which is a native of New Holland and Van Dieman's land, belonging to the natural order Myrtaceæ." * In another part Dr T. continues: "The Dublin College formerly considered kino as the produce of the *Butea frondosa*, a very beautiful plant, a native of the coast of Coromandel; but the red juice of this plant is certainly not kino; and the Dublin College, convinced of its error, has now left the plant unnamed. The greater part of the kino now found in commerce is the inspissated juice of the *Nauclea gambir*, a plant which is a native of India, and belonging to the natural order Rubiaceæ." Kino is a very powerful astringent, and is, like others of its class, useful in hemorrhage and profuse diarrhœa. It has been recommended, in union with opium, in pyrosis. Dr Thomson proposes, or rather hints, at its probable use in gleet. The tannin of kino differs in some of its less important properties from common tannin; it is obtained by adding sulphuric acid to an aqueous solution of kino. A precipitate is thrown down, and the tannin remains in combination with the sulphuric acid. The sulphuric acid is separated by oxide of lead, and the tannin is precipitated by the acetate of lead, and freed from the excess of lead by sulphuretted hydrogen. †—J. D. M.

Officinal preparations. Tinctura Kino, *Lond. Edin. Dub.* Electuarium Catechu, *Edin. Dub.*

Dosis, *a* ℈i. *ad* ʒi. Electuarii; *a* ʒi. *ad* ʒiii. Tincturæ.

RHEUM PALMATUM. *Officinal or Palmated Rhubarb.*

Class and Order, ENNEANDRIA TRIGYNIA. Nat Ord. POLYGONEÆ.

GEN. CHAR. *Corolla* six-cleft, persistent; *Seed* one, three-sided.

Rheum *palmatum*; leaves palmate, acute, roughish; leaf-stalks obscurely furrowed, rounded at the edge.

R. palmatum, *Linn. Sp. Pl.* 531. *Woodville, Med. Bot.* i. p. 127.

A HARDY herbaceous perennial, growing freely in most soils and situations, a native of various parts of Russia, but generally cultivated over Europe. The roots of the different species appear to possess similar properties, and it is a matter of doubt from which species

* El. Mat. Med. and Therap. ii. 35. † Berzelius, Traité de Chimié, v. 591.

the officinal drug is obtained. In this country the roots grow to a large size, and many persons dry and use them for the same purposes as the imported drug. They should be dug up when the leaves are decayed, thoroughly cleared from earth, and the decaying parts of the leaves and stems removed; the roots should be cut into pieces, and carefully dried, either by exposure to the air, or by moderate heat. I have frequently prepared roots of this species, as also those of *R. undulatum*, which could not be detected from the finest foreign samples by several eminent apothecaries.

Several species are now largely cultivated for their leaf-stalks, which are used for domestic purposes as substitutes for unripe gooseberries; the plant may be blanched in the manner of sea-kale, when the whole of it, excepting the root, is fit for the table.—G.

Rhubarb is a valuable tonic purgative; its action is usually mild, and requires to be assisted by some other purgative, such as aloes or calomel. The root, in its entire state, is a favourite remedy with those whose bowels are habitually constipated, and who lead a sedentary life. They chew a small portion of it every morning; and the taste, though at first disagreeable, becomes by habit less so, till, at last, as I have been assured, it becomes rather pleasant than otherwise. It has been recommended as a vermifuge, but its action in this way is not remarkable. In the diseases of children it is a very safe remedy, as it seldom acts too violently. When toasted, it loses nearly the whole of its purgative properties and becomes an excellent tonic. The late Dr Duncan frequently prescribed it when thus prepared. According to Horneman, the composition of the different species of rhubarb is as follows:

	Rhubarb of Russia.	British Rhubarb.	Rheum Rhaponticum.
Bitter of Rhubarb,	16.042	24.375	10.156
Yellow colouring matter,	9.583	9.166	2.187
Extract containing tannin,	14.687	16.458	10.416
Vegetable mucilage,	1.458	1.249	0.833
Matters extracted by potass from woody fibre,	28.333	30.416	40.209
Oxalic acid,	1.042	0.833	
Fibrine and insoluble residue,	13.583	15.416	8.542
Water,	3.333	3.125	6.043
Rhaponticine,			1.043
Starch,			14.583

Rhaponticine and *Rhein*, the latter found by Vaudin, seem to throw no light on what is the active principle of rhubarb. The alcoholic and watery solutions of rhubarb are excellent tests for free alkalies, their bright-yellow colour being changed to a red or deep-brown.—J. D. M.

Officinal. Radix.

Officinal preparations. Infusum Rhei, *Lond. Edin.* Vinum Rhei, *Edin.* Tinctura Rhei, *Lond. Edin. Dub.* Tinctura Rhei Composita, *Lond.* Tinctura Rhei c. Aloes, *Edin.*

Tinctura Rhei c. Gentiana, *Edin.* Pulvis Rhei Compositus, vulgo, Gregory's Mixture. *Edin.* Pilulæ Rhei Compositæ, *Edin.* Extractum Rhei, *Lond.*

Dosis, *a* gr. x. *ad* ℈ij. Pulveris; *ab* ʒij. *ad* ʒiv. Infusi; *a* ʒss. *ad* ʒi. Tincturarum Omnium; *a* ʒss. *ad* ʒi. Pulveris Compositi; *a* gr. x *ad* ʒss. Pilularum et Extracti.

VITIS VINIFERA. Grape Vine.

Class and Order, PENTANDRIA MONOGYNIA. Nat. Ord. VINIFERÆ.

GEN. CHAR. *Calix* five-cleft; *Petals* cohering at the apex, deciduous; *Berry* five-seeded.

Vitis *vinifera;* leaves five-lobed, naked.

V. vinifera, *Lin. Sp. Pl.* 293. *Woodville, Med. Bot.* iii. p. 530.

THIS well known plant is supposed to be a native of Greece; but, from its having so long been an object of culture, its native country, like that of wheat, is by no means satisfactorily ascertained. In all civilized countries, whose temperature allow of its cultivation, the vine stands conspicuous among fruit trees. It was formerly extensively grown in many parts of England in large plantations, or vineyards, as it is now on the continent of Europe, but for the last two centuries, it has gradually declined, and at this time vineyards are unknown in Britain.

The vine is too well known to require description. In other countries its varieties for the desert or manufacture of wine are numerous, but the finest kinds for the table are said to be raised in Britain. In Scotland it rarely matures its fruit in the open ground; but, in the hot summer of 1826, grapes were generally ripened; and, in favourable situations, they were so last autumn in various parts. Though capable of enduring our winter in the open ground, grapes are more generally grown in houses erected for the purpose; and, with the care which our cultivators bestow upon them, attain a superiority in size and flavour, that, in other countries, under more favourable circumstances of climate, they do not attain to.

The largest bunch I have heard of as produced in Britain was grown at the royal garden at Hampton Court, and weighed upwards of twenty pounds; and in 1832 at the Horticultural Society's annual exhibition in Edinburgh, the prize bunch exceeded six pounds in weight.

The grape vine appears to be confined to the old world, as, though now cultivated in America, the only native species is the Fox-grape, *Vitis vulpina*, the fruit of which, from its peculiar flavour, cannot enter into competition with the true grapes. Fifteen species are enumerated, but it is probable that several of these are only varieties. The vine attains to a great age, vineyards being now in bearing that were planted at the end of the fifteenth century. The largest and one of the oldest vines in this country is in the royal garden at Hampton

Court; it was introduced the beginning of last century; and it is at present in full-bearing. Its usual annual produce is about two thousand bunches, weighing from one pound to six or more. Its fertility is probably occasioned by its being planted outside the house, and its roots in close proximity to the principal drain from the kitchen of the palace.—G.

The fruit of the vine is more an article of diet than medicine. When dried they become what are called raisins. In this state they are laxative and mucilaginous, but not so cooling as the recent fruit.

Wine is the juice of the grape altered by fermentation. The numerous varieties depend both upon the quantity of sugar in the must, and on the mode of fermentation. The intoxicating property depends on the quantity of alcohol which it contains. Sherry is that which is commonly used in medicine. Port is generally given in fever, and is more tonic and restorative.—See Henderson's History of Wines.—J. D. M.

Officinal. Fructus.

Officinal preparations. Vinum Album Hispanicum.

GUAIACUM OFFICINALE. *Officinal Guaiacum, or Lignum Vitæ-Tree.*

Class and Order, DECANDRIA MONOGYNIA. Nat. Ord. ZYGOPHYLLEÆ.

GEN. CHAR. *Calix* of five unequal parts; *Petals* five, equal; *Capsule* angular, two to five-celled.

Guaiacum *officinale;* leaflets of two or three pairs, obtuse; capsule two-celled.

G. officinale, *Lin. Sp. Pl.* 546. *Woodville, Med. Bot.* i. p. 43.

THIS species forms a tree of considerable magnitude, attaining the height of forty or fifty feet, and from four to five feet in circumference. It is of slow growth. Its roots strike deep into the soil, in which respect it differs from the generality of timber trees in hot climates, which usually spread their roots horizontally and near the surface; leaves abruptly pinnate; flowers pale-blue, which are succeeded by roundish compressed berries.

The Guaiac is valuable as a timber tree,—the wood is hard, durable, but very heavy, and is much used by turners, also for ships' blocks. Every part of the tree possesses medicinal qualities, but it is the wood and an exudation from it that are in general use. This substance, which spontaneously exudes, contains the active medicinal properties, and is much to be preferred to that procured by artificial means. It is collected in the form of tears. This gum-resin is also obtained by placing billets of the wood, bored longitudinally, across the fire; the resinous matter is melted, runs into the cavity, and is collected at the extre-

mity; in this state, though a powerful medicine, it is less valuable than when naturally formed. It has held its reputation for upwards of three centuries, and was introduced into Europe by the Spaniards in the year 1508.—G.

Guaiac acts on the animal economy as a general stimulus. It is useful in the sequelæ of syphilis, and in scrofulous affections; it is also prescribed in gout; the resin acts in the same way as the wood, but is more powerful. It acts as a diaphoretic if the patient be kept warm, and as a diuretic if he be freely exposed to cold air. The changes of colour which guaiac resin undergoes are remarkable.

"Guaiac resin has a brownish yellow colour externally; when held against the light it is transparent, breaks with an uniform smooth shining fracture, of a bluish green colour, is pulverizable, and the powder has a white colour, gradually becoming bluish green; is fusible in a moderate heat, but not softened by the heat of the fingers; without proper smell or taste, but when thrown on hot coals diffusing an agreeable odour, and when swallowed in a state of minute division causing an insufferable burning and pricking in the throat. Its specific gravity is 1.23 or 1.20. Mr Brande of London has investigated this substance with much care. Digested with water, about one-tenth of it is dissolved, the water acquiring a sweetish taste and greenish-brown colour. The liquid, when evaporated, leaves a brown substance soluble in hot water and alcohol, but scarcely in sulphuric ether, and precipitating the muriates of alumina and tin. Buchner thinks this is derived from particles of the bark torn off with the resin. Alcohol readily forms with guaiac a deep brown-coloured solution, decomposed by water, and precipitated green, brown, or pale blue by acids. It is also soluble in ether and alkaline leys and in sulphuric acid. Nitric acid converts it into oxalic acid. On being burnt it leaves a large proportion of charcoal. Dr Wollaston has discovered that by exposure to the air and light it acquires a green colour. This effect is produced in the greatest degree by the most refrangible rays. In the least refrangible rays it is disoxidized, and the yellow colour is restored. It gives a blue colour to the gluten of wheat flour, and to vegetable matters containing gluten, and to mucilage of gum arabic, and to milk. It is sometimes adulterated with colophony or common resin; but the fraud is easily detected by the smell of turpentine emitted when thrown on live coals." *

Berzelius says that guaiac has not been examined by any modern pharmaceutic chemist. One ounce of the wood gives from 35 to 160 grains of resin, and from 45 to 96 grains of watery extract. †—J. D. M.

Officinal. Lignum.

Officinal Preparations. Tinctura Guaiaci, *Lond. Edin. Dub.* Tinctura Guaiaci Ammoniata, *Lond. Edin. Dub.* Decoctum Guaiaci Compositum, *Edin.* Decoctum Sarsaparillæ Compositum, *Lond. Dub.* Mistura Guaiaci, *Edin.*

Dosis, *a* ʒi. *ad* ʒii. Tincturæ et Tincturæ Ammoniatæ; *ab* ℥ij. *ad* ʒiv. Decocti Compositi; *ab* ʒi. *ad* ʒij. Misturæ; *a* gr. x. *ad* ʒss. Resinæ.

* Duncan's Dispensatory, p.357-358. † Berzelius, Traité de Chimie, vi. 243.

ALOE SOCOTRINA. Socotrine Aloe.

Class and Order, HEXANDRIA MONOGYNIA. Nat. Ord. ASPHODELEÆ.

GEN. CHAR. *Flower* tubular, monopetalous, six-cleft, secreting honey at its base; *Filaments* inserted into the receptacle; *Capsule* three-celled, three-valved, many-seeded; *Seeds* in two rows, with a membranous edge.

Aloe *socotrina;* leaves long, ensiform, spotted with white, edges incurved, spines white.

A. socotrina, *Bot. Mag.* t. 472. *Woodville, Med. Bot.* iv. t. 269.

MUCH uncertainty prevails respecting the species from which the finest kinds of this drug are obtained; that introduced from the island of Socotora, and named *Socotrina*, is considered as yielding the best sort. It is of a deep bright brown when in mass, but small pieces when viewed between the eye and the light appear of a full reddish-yellow, perfectly clear and free from impurities. It is glossy and breaks with a smooth fracture, is rendered friable by cold, softens and becomes adhesive to the touch by heat, and is easily reduced to powder, which in fine samples is of a bright golden yellow, with a strong peculiar smell and nauseous taste. This kind is rarely met with in the drug market, its place being supplied by an extract from the *A. spicata*, the drug obtained from which is paler-coloured, less glossy, softer, and when powdered has more the colour of gamboge than the Socotrine, and the smell is more unpleasant. The *spicata* is a native of the Cape of Good Hope, which country produces nearly all the known species of the genus, and probably more than one is used for the extract, as the juice of *A. arborescens*, *purpurata*, and *Africana*, is very similar in taste. A much inferior article, imported from the West Indies, is extracted from *A. vulgaris*, (the *Barbadense* of Haworth,) or Barbadoes aloe; it is of duller aspect than either of the preceding, having a fetid odour and a rank offensive taste, and when reduced to powder is of an olive yellow. The Barbadoes or hepatic does not dissolve so completely in boiling water as the Socotrine or spiked aloes, by which the adulteration of the one with the other may be detected. Caballine aloes is considered as the refuse of the hepatic; it abounds in impurities, and has a most offensive odour and taste.

All the species of aloe are of curious structure, they vary exceedingly in form, yet always retain sufficient of their essential characters to enable any one who has once seen an *aloe* to recognize them. In their native countries some kinds acquire an altitude and size that entitle them to be called trees, whilst others are so diminutive that a common wine-glass would contain several flowering plants; they all secrete large quantities of delicious honey, which in many kinds is constantly distilling from the flowers. They are

succulent, of easy culture, and require to be kept in the stove during the geater part of the year, and to be sparingly supplied with water; the species are numerous, ninety-six being described in Loudon's Encyclopædia of Plants.—G.

Three kinds of aloes occur in commerce. The Socotrine, the hepatic or Barbadoes, and the Caballine. Of the two first the Socotrine is the most valued, but not a few practitioners in this city prefer the hepatic, which acts more effectually, and is less subject to adulteration. Aloes act chiefly on the colon and rectum, and are therefore improper in hæmorrhoids and in pregnancy. They are usually combined with some other purgative, such as rhubarb, colocynth, sulphate of potass, soap, or with some saline substance. When a habitual purgative is required, aloes in combination is one of the best we can employ, as the dose rarely requires to be increased, as that of almost all other purgatives does when long continued. In obstruction of the menstrual and hæmorrhoidal discharges, aloes are useful.

Braconnot found a peculiar substance in all the varieties of aloes, to which he has given the name of bitter of aloes. The Socotrine and Barbadoes are the kinds used in medicine; the Caballine is only used in veterinary surgery.

Officinal. Succus Inspissatus.

Officinal preparations. Tinctura Aloes Composita, *Lond. Edin. Dub.* Tinctura Aloes Etherea, *Edin.* Tinctura Aloes, *Lond. Edin. Dub.* Pilulæ Aloes et Myrrhæ, *Lond. Edin. Dub.* Pilulæ Aloeticæ, *Edin. Dub.* Pilulæ Scammonii Compositæ c. Aloes. Extractum Aloes, *Lond.* Decoctum Aloes Compositum, *Lond.* Vinum Aloes, *Edin.*

Dosis, *a* gr. x. *ad* ℈i. Pilularum Omnium; *a* ʒss. *ad* ʒiss. Tincturarum; *a* gr. v. *ad* gr. x. Extracti; *a* ℥ss. *ad* ℥ii. Decocti; et *a* ℥ss. *ad* ℥i. Vini.

PAPAVER SOMNIFERUM. White, or Opium Poppy.

Class and Order, Nat. Ord. and Gen. Character, see *P. Rhœas*, p. 6.

Papaver *somniferum;* Capsule globose; leaves amplexicaul, glaucous; leaves, stems, and capsule perfectly smooth.

P. somniferum, *Lin. Sp. Pl.* 726. *Woodville, Med. Bot.* iii. p. 503. *Fl. Brit.* ii. p. 568. *Engl. Bot.* t. 2145. *Hooker, Br. Fl.* p. 256.

Root annual; leaves and stems glaucous; flowers usually white, sometimes with a purple eye, and varying through every shade of purple and scarlet, and with single or double flowers. This is one of the most shewy of our annuals, and, from its being universally cultivated in gardens, has become so far naturalized and distributed through Great Britain, as

to be considered a native; in the vicinity of large towns, and on the banks of streams, and amongst rubbish it is frequently met with, and in the vicinity of Edinburgh it is to be found in every direction.

All the species of poppy yield the well-known drug opium, but this species produces it in the greatest abundance and of superior quality; it is yielded by the garden varieties equally with the common kind; when cultivated for medicinal purposes, it should be sown on a light rich soil, and be constantly supplied with water until the capsules are half grown, at which time the waterings must be discontinued; the capsules should be cut across the rind without penetrating to the seeds, in the evening; during the night a considerable quantity of juice exudes from the wound, which should be carefully collected the following morning, and this operation be continued as long as any of the opium flows; the juice as obtained should be carefully kneaded together, and be exposed to the air and sun to allow evaporation freely; when the mass has hardened, it should be no longer exposed, but, after being enveloped in some of the leaves, should be kept from the air.

Many attempts have been made to cultivate the poppy in this country for the opium, but though perfectly successful as to the quality of it, the expenses attending its cultivation are too great to render it of practical utility. The only produce which pays the cultivator in Britain is the ripe capsules, for which it is grown to considerable extent in the neighbourhood of London; its seed is occasionally used, particularly in the south of Europe, for food, as well as for the large quantity of bland oil they yield, which is often substituted for olive oil.

The great demand for opium has subjected it to numerous adulterations. Sometimes it is mixed with considerable quantities of the leaves and stems broken into small pieces; sometimes sand is worked up into the mass, and a variety of extraneous substances introduced. The practitioner will judge of the quality of the drug from the clearness and depth of colour, its freeness from visible impurities, and the addition of sand is readily detected in the mouth; when good it should be dry and tough, of a full colour, having a powerful taste and odour; but excellent opium may be moist and flexible, because fresh imported, and consequently not long in bond. An elegant preparation has recently been imported, under the name of Persian opium; this is made up into lozenges and enveloped in paper; its colour is lighter and brighter than the other kinds, but it yields less morphia. The principal part of the opium used in this country is obtained from the Levant. A substance resembling opium is obtained from the *Glaucium luteum*, the yellow-horned poppy, from *Meconopsis Cambrica*, the Welsh poppy, and *Cheledonium majus*, common Celandine; the odour of the two first resembles true opium, but the latter has a smell peculiar to itself. Twenty-two species are enumerated of this genus besides varieties; and six are natives of Great Britain.—G.

Like all narcotics, opium exerts in the first instance a stimulant action, and the duration of this depends entirely on the quantity given. If a large dose be taken, the stimulant effects are not marked, and we only see the narcotic or depressing effects. If the dose be small then the stimulant properties manifest themselves, and the narcotic qualities either show themselves slightly or not at all. If the dose be repeated before the excitement is over, then the narcotism is put off, and it is thus that opium-eaters keep up that mental ex-

citement which at last proves so injurious. Opium has been said to excite the mental powers, while alcohol or wine acts more immediately on the animal, but this is not by any means ascertained, as the Turks use it as an Aphrodisiac, and to inspire them with courage. When taken habitually in large doses, opium produces the most baneful effects. The powers of body and mind become worn out; melancholy of the deepest nature supervenes, unless when the person is under the influence of the drug. The action of opium on the system is much influenced by sex, temperature, age, climate, and custom. Women are more easily affected by opium than men, and nausea more frequently follows a full dose; young people are more readily stimulated than old; sanguine temperaments are also more readily excited by this stimulus than melancholic, and nervous than lymphatic. Climate so far influences the action of opium, that a smaller dose acts more effectually in a warm than in a cold climate. Custom has a most powerful influence on the action of opium; for we know that men have brought themselves to take three or four drachms of opium daily, and that a drachm a day is not an uncommon dose for an opium-eater. Opium is the most valuable narcotic we possess; it is capable of being combined with so many other medicines; and its effects are so much under the control of the physician. It is antispasmodic and astringent, and its anodyne properties are remarkable. When combined with a diaphoretic, opium increases its powers, but does not lose its own; it moderates the violence of a cathartic; diminishes the irritation which many expectorants otherwise cause; retains by its astringent properties many remedies which would otherwise pass out of the system; allays external inflammation, and gives relief in rheumatic pains. In short, we may say, that, in the hands of a judicious practitioner, opium almost entirely supersedes the use of other narcotics where there is no constitutional peculiarity which prevents the exhibition of it.

The chemical history of opium is extremely interesting, from the complexity of its composition. Sertuerner, an apothecary in Eimbech, discovered its active principle, *morphia*, in 1803, but it did not attract general attention till 1817, when Robiquet and Gay-Lussac confirmed his experiments. Sertuerner's process was simple; he made an infusion of four ounces of opium, and after allowing it to stand for the purpose of depositing some salts of potass and lime, he evaporated the solution to eight ounces, and added caustic ammonia, by which a precipitate amounting to three drachms was thrown down. This precipitate Sertuerner called morphia; he purified it by solution in boiling alcohol and crystallization, and found that it possessed all the properties of an alkali, uniting with, and neutralizing acids, restoring the blue of litmus-paper, which had been previously reddened by an acid, and rendering turmeric and rhubarb deep brown. Various improvements were afterwards made in this process, but, except that of digesting the precipitate in dilute alcohol to free it from narcotine and colouring matter, none are of any importance, and indeed we find that most chemists have returned to Sertuerner's process by ammonia. As all the processes by alcohol are expensive, the great desideratum was to procure morphia without using that fluid, Dr William Gregory succeeded in attaining this object. His first process is as follows:

"Opium is cut in small pieces, and completely exhausted by cold water, or water at 90° F. The aqueous infusion is concentrated till it occupies a small bulk, and is precipitated by a

slight excess of ammonia. The precipitate is collected on a filter, washed moderately with cold water, and dried at a temperature below 212°. When dry, it is reduced to powder, and rubbed up with cold water. Diluted muriatic acid is now added by degrees. The first portions are speedily neutralized, but fresh acid is added until a slight but permanent excess is present. This dissolves both the morphia and narcotine, forming a dark-brown solution, which must be filtered to separate it from some very dark matter which is left undissolved. The filtered solution is now evaporated to nearly the consistence of syrup, and on cooling forms a brown mass of crystals moistened with a very dark liquid. The whole mass is now subjected to strong pressure between folds of bibulous paper, which absorbs the liquid containing the muriate of narcotine and colouring matter, and leaves the muriate of morphia tolerably pure, although still of a brownish colour. A second solution, crystallization, and expression, yields the salt nearly white and free from narcotine. By a third crystallization the muriate of morphia may be obtained in radiated bunches of silky crystals of snowy whiteness. These crystals, when dried by a moderate heat, become quite opaque. They are soluble to almost any extent in boiling water. Their solution has a very bitter taste, and yields, when supersaturated by ammonia, a highly crystalline precipitate of morphia. A similarly pure solution of narcotine in muriatic acid gives a curdy precipitate, not at all crystalline.

"The quantity of muriate of morphia obtained from opium by the above process varies according to the quality of the drug. From a very pure specimen of Mr Young's British opium I obtained 13.5 per cent of nearly pure salt in one of the first experiments I made. I have no doubt there was here considerable loss. On the other hand, from an equally pure specimen of East India opium, I obtained only 4.5 per cent. Here also I believe a good deal was lost. The average amount I have hitherto obtained from good Turkey opium is from 10 to 11 per cent., quite pure. A great loss is sustained in the purification. Thus, in the experiments which yielded the above average quantity, the amount of the impure salt obtained by the first crystallization, which had only a fawn colour, was always from 13 to 15 per cent. From a beautiful specimen of Turkey opium, I even got 17.5 per cent. of the impure salt. In all cases, the salt was dried by a heat of 150° F. until it ceased to lose weight, before its quantity was ascertained. In the repeated processes of expression, much muriate of morphia is absorbed by the paper along with the muriate of narcotine, and it may even be again recovered from the paper. I am at present engaged, along with my friend Dr Montgomery Robertson, in endeavouring to purify the muriate with a smaller loss, and we have good hopes of the result. But, taking the quantity of pure muriate obtained at 10 per cent., that is, about 12 drachms from the pound avoirdupois, this is incomparably the cheapest preparation of morphia having any pretensions to purity. The acetate used in this country, and the sulphate employed in France, are made, or should be made, by combining crystallized morphia with the acids. But, to obtain the morphia crystallized, a quantity of alcohol must be employed, which, in this country at least, enhances very much the expense of the preparation; and it is this expense which the above process will obviate, as no alcohol whatever is employed." *

* Edin. Med. and Surg. Journal, No. 107, pp. 332, 333.

The process was afterwards much improved by Drs Gregory and Robertson, and has been perfected by Messrs Duncan and Flockhart, by whom considerable quantities of the pure muriate of morphia are prepared, and by whom the London market is chiefly supplied. The improvements consist in adding a solution of muriate of lime of a certain strength to the infusion of opium; the meconic acid, and a large proportion of the narcotine are thus thrown down, and the muriatic acid of the muriate of lime unites with the morphia, which is obtained in the form of muriate by evaporation. It is purified by pressure, which separates the muriate of narcotine, a much more soluble salt, and by subsequent solution in water and crystallization. By the addition of caustic ammonia to a pretty concentrated solution of this muriate, perfectly pure morphia in the form of minute crystals of perfect whiteness may be obtained. Narcotine, the substance mentioned above as being thrown down at the same time with the morphia, and which was discovered by Derosne, and was long known as the "Salt of Derosne," is easily procured from the precipitate thrown down in Sertuerner's process, by acting on it with dilute alcohol, which dissolves the narcotine and leaves the morphia. It is purified by repeated crystallizations from strong alcohol or from ether. It unites with acids, but does not exert an alkaline reaction. Meconic acid was discovered by Sertuerner at the same time with morphia, with which it is combined in opium. It can be procured by various processes. Perhaps the best is that of Dr Hare. After the morphia is precipitated, he boils the liquid to free it from ammonia; he then adds acetate of lead, by which an insoluble meconate of lead is formed; this he collects, diffuses in water, and submits to the action of sulphuretted hydrogen by which the meconate of lead is decomposed, the meconic acid being set free, and the lead thrown down in the form of sulphuret. The acid is obtained in a crystalline form by evaporation, and can be obtained quite pure by repeated crystallizations. Meconic acid can also be procured from the precipitate formed by adding muriate of lime to an infusion of opium. The meconate of lime which is thrown down parts with its meconic acid when an acid having a greater affinity for the lime is added. The meconic acid thus prepared is not so pure, nor is not so easily purified, as by Dr Hare's process. Four other crystalline substances have been lately discovered in opium, *Narceine* by Pelletier, *Meconine* by Couerbe, *Codein* by Robiquet, and *para-morphine*. The *narceine* and *meconine* have hitherto been procured in very small quantity, and have not yet been applied to any useful purpose. Codeine was discovered by Robiquet in the washings of the morphia precipitated from the muriate. It is prepared by evaporating the washings with a slight excess of muriatic acid till they form crystals on cooling; these are acted upon with caustic potass, which dissolves the morphia and combines with the muriatic acid, while the codein is left. It is purified by repeated crystallizations in alcohol, water, or ether, or by being united with an acid and precipitated by an alkali. Para-morphine is not much known as yet, and does not promise to be of much interest. In addition to the distinct and peculiar principles above enumerated, opium contains fatty matter of a rank disagreeable odour; hard and soft resin; caoutchouc; balsamic extract; extractive matter; and traces of volatile oil. I found that opium yielded an empyreumatic oil virulently poisonous, and which no doubt is the cause of the intoxication which the smoke of opium produces in the Turks, Chinese, and other Eastern nations who use it in that form.

"The oil obtained from opium is of thicker consistence than any of the preceding, viz. *Di-*

gitalis, Hyoscyamus, &c. and does not melt at so low a temperature, (160° F.) Water and dilute acid acts upon it, as upon that of the *digitalis* and others.

" The liquid which is distilled along with it, and the water in which it is washed, contain a considerable quantity of meconate of ammonia. The smell of this oil is very disagreeable, but does not resemble the others. I would call it more narcotic." *

Since the discovery of morphia, it has always been considered as the active principle of opium, and though it may not be quite so powerful as the proportional quantity of opium, yet we must still consider it in that light. The muriate of morphia is now very extensively used instead of laudanum, and agrees with constitutions where laudanum never could be taken from the disagreeable effects to which it gave rise. I have tried muriate of morphia in cholera, and found it superior to laudanum or solid opium, as it did not seem to cause determination to the head, which all preparations of opium itself seemed to do.

The characters of morphia are as follow:—It is white, transparent, brilliant, and crystallizes in six-sided prisms slightly flattened. Its taste is extremely bitter when in solution or in combination with an acid; its insolubility prevents its taste being recognized easily when taken into the mouth in a pure and solid form. It unites with acids and forms neutral crystalline salts. It is nearly insoluble in water, soluble in boiling alcohol, and sparingly so in that fluid when cold. Soluble in caustic potass and in sulphuric ether; it strikes a deep orange when brought into contact with strong nitric acid. Heated to about 400° F. it melts, and regains its crystalline texture on cooling; when heated much above this it blackens, swells, and burns with a clear flame giving off an ammoniacal odour.

The sulphate and acetate are used in medicine as well as the muriate, but the latter salt is more easily prepared, and is cheaper.

Narcotine crystallizes in large tabular crystals, which generally assume a feathered form; its taste is bitter; it is soluble in dilute alcohol, and extremely so in ether, naphtha and the fixed oils; it is nearly insoluble in water; it forms crystalline salts with the acids, but it has no alkaline reaction. It requires numerous crystallizations to render it perfectly pure, and I have found, that, by adopting the same process which is fully described under the heads of *Elaterium* and *Piper nigrum*, it can be obtained in a state of purity with less trouble and expense. It has been proposed as a tonic, and has been used in France with this view; Dr Baillie states that it occasionally acts as an aphrodisiac.

Narceine and *Meconine* are both crystalline, and are capable of uniting with acids. For further information, see the papers of Pelletier and Couerbe, in the Journal de Pharmacie, xviii. p. 666.

Codein is crystalline, transparent, and colourless; its taste is bitter, and similar to morphia; it is very soluble in boiling alcohol, ether, and water, and is deposited in crystals affecting the octahedral form, and much larger than those of the other vegetable alkalies. It unites with the acids, and forms neutral salts, and shows all the other characters of an alkali. When the nitrate or muriate of Codein is taken in a dose of six grains, it causes general excitement, followed by languor, and accompanied by a sense of pricking or itching, chiefly about the neck and hands. It seems that the disagreeable itching

* Edin. Med. and Surg. Journal, No. 115, p. 30.

produced by muriate of morphia, and other preparations of opium, is to be referred to this substance. Among seven or eight gentlemen who took this substance, as prepared by Dr Gregory, all were excited, and the excitement was chiefly intellectual; all were depressed after its stimulant action had gone off, and two in such an alarming degree as to be obliged to take stimuli of various kinds. The itching took place in all, but in some less than others; I hardly felt it all, and was less affected by its exciting or depressing effects than any of the others who tried it. Dr Gregory states, that the muriate of morphia when freed from codein, of which it contains a considerable per centage, acts with even less chance of causing the disagreeable effects of opium. Meconic acid is of no use in medicine; it is a solid crystalline substance of an austere, bitter, sour taste. It forms insoluble salts, with lead, lime, and magnesia, and unites with all the alkaline bases. It possesses a remarkable property of striking a deep blood-red colour, with the per-salts of iron, and is one of the best tests of their presence. It is volatile, and can be purified by sublimation; but several chemists are of opinion that it undergoes some change in this operation.

The preparations of opium for internal use are numerous, but do not now call for so much attention, since the salts of morphia have become so common and so cheap. The "black drop," Battley's sedative liquor, are supposed to be citrates and tartrates of morphia, and are superior to laudanum. The ammoniated tincture of opium is an excellent preparation, and very useful in pectoral affections; it is known by the name of "Scotch paregoric elixir." The camphorated tincture is another very good preparation in pectoral complaints, and is known by the name of "English paregoric."

I shall quote Dr Christison's remarks on opium as a poison, and on the means of detecting it after death, as there is no other work which gives so full an account, and at the same time so succinct and minute a detail.

"To the medical jurist opium is one of the most important of poisons; since there is hardly any other whose effects come more frequently under his cognizance. It is the poison most generally resorted to by the timid to accomplish self-destruction, for which purpose it is peculiarly well adapted on account of the gentleness of its operation. It has also been often the source of fatal accidents, which naturally arise from its extensive employment in medicine. It has likewise been long very improperly employed to create amusement. And in recent times it has been made use of to commit murder, and to induce stupor previous to the commission of robbery. *Mr Burnett*, in his work on Criminal Law, has mentioned a trial for murder in 1800, in which the prisoners were accused of having committed the crime by poisoning with opium; and although a verdict of *not proven* was returned, there is little doubt that the deceased, an adult, was poisoned in the way supposed. A few years ago a very remarkable trial took place at Paris, where poisoning was alleged to have been effected by means of the alkaloid principle of opium; and the prisoner, a young physician of the name of Castaing, was condemned and executed.

"In several parts of Scotland during the last five years many persons have been brought into great danger by opium having been administered as a narcotic to facilitate robbery, and some have actually been killed. In December 1828 a conviction was obtained in the Justiciary Court of Edinburgh for this crime, in which instance the persons who had taken the opium recovered. A fatal case, which was strongly suspected to be of this nature, was

submitted to me by the Sheriff of this county in 1828; but sufficient evidence could not be procured. In July 1829 a man Stewart and his wife were condemned, and subsequently executed for the same crime, the person to whom they gave the opium having been killed by it. And about a year afterwards a similar instance occurred in Glasgow, for which a man Byers and his wife were condemned at the last Autumn Circuit." *

" Having stated these particulars of the chemical history of opium and its chief component ingredients, I shall now describe what has appeared to me the most delicate and satisfactory method of detecting it in a mixed state.

" 1. If there is any solid matter it is to be cut into small fragments, water is to be added if necessary, then a little acetic acid sufficient to render the mixture acidulous, and when the whole mass has been well stirred and has stood a few minutes, it is to be filtered, and evaporated at a temperature somewhat below ebullition to the consistence of a moderately thick syrup. To this extract strong alcohol is to be gradually added, care being taken to break down any coagulum which may be formed; and after ebullition and cooling, the alcoholic solution is to be filtered. The solution must then be evaporated to the consistence of a thin syrup, and the residue dissolved in distilled water and filtered anew.

" 2. Add now the solution of acetate of lead as long as it causes precipitation, filter and wash. The filtered fluid contains the morphia, and the precipitate on the filter contains meconic acid united with the oxide of lead.

" 3. The fluid part is to be treated with sulphuretted-hydrogen to throw down any lead which may remain in solution. It is then to be filtered while *cold*, and evaporated sufficiently in a vapour-bath. The solution in this state will sometimes be sufficiently pure for the application of the tests for morphia; but in many cases it is necessary, and in all advisable to purify it still farther. For this purpose the fluid is to be precipitated with ammonia; and the precipitate having been collected, washed, and drained on a filter, the precipitate and portion of the filter to which it adheres are to be boiled in a little pure alcohol. The alcoholic solution, filtered, if necessary, will give by evaporation a crystalline residue, which becomes orange-red with nitric acid, and when suspended in water becomes blue with permuriate of iron. The latter property I have sometimes been unable to develope when the former was presented characteristically.

" 4. It is useful, however, to separate the meconic acid also: because, as its properties are more delicate, I have repeatedly been able to detect it satisfactorily, when I did not feel satisfied with the result of the search for morphia. *Dr Ure* made the same remark in his evidence on the trial of Stewart and his wife. He detected the meconic acid, but could not separate the morphia. Suspend, therefore, in a little water the precipitate caused by the acetate of lead (par. 2); transmit sulphuretted-hydrogen till the whole precipitate is blackened; filter immediately without boiling; then boil, and if necessary filter a second time. A great deal of the impurities thrown down by the acetate of lead will be separated with the sulphuret of lead; and the meconic acid is dissolved. But it requires in general farther purification, which is best attained by again throwing it down with acetate of lead, and repeating the steps of the present praragraph. The fluid is now to be concentrated by evaporation, and subjected to the tests for meconic acid, more particularly to the action of perchloride of iron, when the quantity is small. If there is evidently a considerable quantity of acid,

* Christison on Poisons, p. 600.

a portion should be evaporated till it yields crystalline scales, which have always a yellowish tint: and these are to be heated in a tube to procure the arborescent crystalline sublimate formerly described. About a sixth of a grain of meconic acid, however, is required to try the latter test conveniently.

"I wish I could add my testimony to the opinion, expressed on a remarkable occasion by *Professor Chaussier*, in favour of the delicacy of the tests for morphia and its compounds, that they might be detected 'jusqu'à une molécule.' To a certain extent this statement may be correct. Morphia, separated from the complex mixture of principles with which it is combined in opium, may be detected in extremely small quantities. Accordingly, *M. Lassaigne* has not long ago supplied, for the discovery of acetate of morphia in mixed fluids, an excellent process, from which the chief part of the three first paragraphs of the preceding method for opium are borrowed; and from the facts stated by him in his paper, as well as from the experimental testimony of *Professor Orfila*, it appears that Lassaigne's process will furnish strong indications, if not absolute proof of the presence of that salt, in the proportion of two grains to eight ounces of the most complex mixtures. Hence the search for acetate of morphia in a suspected case is by no means hopeless. But the detection of acetate of morphia is an object of small moment compared with the detection of morphia in its natural state of combination in opium. Now my own observations lead me to entertain serious doubts whether the method of Lassaigne could be successfully applied to the analysis of complex mixtures, which, instead of the proportion of acetate of morphia mentioned above, namely, two grains in eight ounces, contained the corresponding proportion of opium, that is a scruple of solid opium, or four drachms of laudanum. By the process I have recommended it is easy to procure, from an infusion of ten grains of opium in four ounces of water, satisfactory proof of the presence of morphia by the action of ammonia, perchloride of iron and nitric acid, and equally distinct proof of the presence of meconic acid by the permuriate of iron, as well as by the sulphate of copper. But on proceeding to apply the process to organic mixtures, I found that, when the soluble part of ten grains of opium was mixed with four ounces of porter or milk, I could develope no other property of morphia except its bitterness, and could obtain but faint indications of meconic acid by the action of the permuriate of iron."*

The above quotations contain only a moiety of what Dr Christison says on the subject, and I must refer those who wish further information to his work.—J. D. M.

Officinal. Opium, *i. e.* Succus Concretus vel Gummi-Resina Papaveris Somniferi.

Officinal preparations. Opium purificatum, *Dub.* Extractum Opii, *Lond. Edin. Dub.* Electuarium Opii, *Edin.* Confectio Opii, *Lond. Edin.* Tinctura Opii, *Lond. Edin. Dub.* Tinctura Opii Ammoniata, *Edin.* Tinctura Opii Camphorata vel Camphoræ Composita, *Lond. Dub.* Pilulæ Opiatæ, *Edin.* Pilulæ Saponis c. Opio, *Lond.* Pilulæ e Styrace, *Dub.* Pulvis Ipecacuanæ Compositus vel Pulvis Doveri, *Lond. Edin. Dub.* Pulvis Cretæ Compositus c. Opio, *Lond.* Pulvis Opiatus, *Edin.* Pulvis Cornu usti c. Opio, *Lond.* Trochisci Glycyrrhizæ c. Opii, *Edin.* Tinctura Saponis c. Opio, vulgo Linimentum Anodynum, *Edin.* Vinum Opii, *Edin.*

* Christison on Poisons, pp. 606-609.

Lactuca virosa.

Dosis, *a* gr. $\frac{1}{4}$ *ad* gr. ss. Opii pro stimulo; *a* gr. ss. *ad* gr. ij. Opii, vel Opii purificati et extracti, pro anodyno; *a* gr. xv. *ad* ℈ij. Electuarii et Confectionis; *a* gtt. xx. *ad* gtt. xl. Tincturæ Opii; *a* ʒss. *ad* ʒi. Tincturæ Ammoniatæ; *a* ʒiss. *ad* ʒiii. Tincturæ Camphoratæ; *a* gr. x. *ad* ℈i. Pilulæ Opiatæ, Saponis c. Opio, et e Styrace; *a* gr. vii. *ad* xvi. Pulveris Doverii; *a* gr. x. *ad* ℈i Pulveris Cornu usti c. Opio et Pulveris Opiati et *a* gr. x. *ad* ℈ij. Pulveris Cretæ Compositi c. Opio; ab octo ad sexdecim Trochiscorum indies; *a* gtt. xxv. *ad* ʒi. Vini Opii..

a gr. $\frac{1}{4}$ *ad* gr. $\frac{1}{2}$ Muriatis Morphiæ et *a* gtt. xxv. *ad* xl. Solutionis Muriatis Morphia.

LACTUCA VIROSA. Strong-scented or Poison Lettuce.

Class and Order, SYNGENESIA ÆQUALIS. Nat. Ord. COMPOSITÆ.

GEN. CHAR. *Involucre* imbricated, cylindrical, its scales with a membranous margin; *Receptacle* naked; *Pappus* simple, stipitate.

Lactuca *virosa;* leaves patent, oblong, toothed, two-eared, amplexicaul; mid-rib prickly beneath; flowers panicled.

L. virosa, *Linn. Sp. Pl.* 1119. *Fl. Brit.* p. 819. *Eng. Bot.* t. 1957. *Hooker, Br. Fl.* p. 339.

THE *Lactuca virosa* is occasionally met with in various parts of the kingdom, but is not a common plant; it usually grows on dry chalky soils, but in the neighbourhood of Edinburgh grows luxuriantly from the fissures of the basaltic rocks on the side of the footpath to Duddingstone, where it often attains the height of six or more feet; in this situation the stems are long, slender, and tough, having a stiff rigid appearance; it flowers in July and August, and the seedling plants, appear towards the end of September. They do not always flower the following year, but produce a clustre of leaves which spread in a circular form; but, as the plant approaches to flowering, the greater part of the radical leaves die away, and the stems have only a few distantly placed leaves; flowers small, pale yellow; these do not expand except in fine sunny weather, but the seed is perfected whether the flowers expand or not. The whole plant abounds in a milky juice, possessing narcotic properties of a similar nature with those of opium, and without its constipating quality; the juice is collected in a similar way to opium, and is obtained from the plants by nipping off the extremities of the branches, from which the juice exudes.

Loudon has enumerated twenty-six species; but it is doubtful if many of these are not varieties, differing from climate or cultivation; and it is an opinion held by many, that the present poisonous species is the original from which our garden or cultivated kinds have been obtained.—G.

Dr Duncan Senior was the first who called the attention of the profession to the Garden Lettuce as a medicine, and by him the concrete juice was introduced under the name of

Lactucarium. But the drug now prepared is obtained from *L. virosa.* It is anodyne and soporific, and agrees with most people even where morphia is followed by unpleasant effects. The sleep which Lactucarium causes is calm and refreshing, and is seldom disturbed by unpleasant dreams. An extract one-half the strength of Lactucarium, and prepared at one-sixth the price, can be obtained by boiling the flowers, stem, and leaves, when they begin to wither, in water for some hours, and then evaporating. The Lactucarium prepared by Messrs Duncan and Flockhart of this place is the finest and best which can be met with, and is of uniform strength. A great number of the continental chemists have analyzed the substance, for the purpose of procuring morphia, but they have been disappointed. I tried it also, and neither obtained morphia nor any other substance at all resembling it. Its empyreumatic oil is somewhat similar in appearance to that of opium. Plaff discovered in the *L. virosa* a peculiar acid, to which he has given the name of *Lactucic;* it is somewhat analogous to the oxalic. The French call *Lactucarium Thridace.*—For more particular information, see Duncan's Dispensatory, p. 384, and Supplement, pp. 63, 64.

" There is a considerable resemblance between the oil of this and that of opium; the smell is not unlike. It melts in a lower temperature, about 110° F." *—J. D. M.

Officinal. Folia et Caules.
Officinal preparation. Succus Concretus, *Edin.*
Dosis, *a* gr. ij. *ad* iv. Succi Concreti; *a* ʒss. *ad* ʒi. Tincturæ.

HELLEBORUS NIGER. Black Hellebore or Christmas Rose.

Class and Order, Nat. Ord. and Generic Character, see *H. fœtidus*, p. 57.

Helleborus *niger;* radical leaves pedate, smooth, scape one or two-flowered, each flower with a bractea.

H. niger, *Lin. Sp. Pl.* 783. *Bot. Mag.* t. 8.

THIS species acquires its specific name from the black colour of its roots; it is a hardy perennial; flowering from the end of December to the middle of March, or later; and, from its usually producing its flowers during the winter, has acquired its common appellation of Christmas Rose.

Root knotty; externally blackish; within white; producing numerous fibres that descend deep into the soil; leaves growing on long footstalks immediately from the root, of a deep shining green, and deeply divided into five or more segments; flowers large, mostly solitary;

* Observations on the Chemical and Physiological Properties of the Empyreumatic Oils of Foxglove, Henbane, and Tobacco. By John Davie Morries, M. D. &c.—Edin. Med. and Surg. Journal, No. 115, p. 377.

at first white, but changing to a pale red, and finally a dusky purple, produced on scapes arising directly from the root. The Black Hellebore has been long cultivated in this country, being enumerated by Gerard in 1596. It is a native of Austria, Italy, and other parts of Europe, bears our climate exceedingly well, and is well worth a place in every garden, as it is not apt to encroach upon its neighbours, and produces its flower at a season when but few others can compete with it.

Though long considered as the Helleborus of the ancients, there is little doubt but this plant was the *H. orientalis*, a plant of much more recent introduction into this country; and which, though probably equally hardy, has not yet found its way, except into the gardens of the curious.—G.

The *Helleborus niger* is purgative and emetic when given in a full dose, and emmenagogue and diuretic when prescribed in small quantity. It does not possess any advantage over jalap, scammony, or any brisk stimulating purgative; and, as it is poisonous, it ought never to be used for its purgative properties alone. It is said to be useful in small doses as a stimulating diuretic. Three drachms killed a dog in three hours, when introduced into the stomach and retained there by ligature; and two drachms proved fatal when applied to a wound. Giddiness, palsy of the posterior extremities, and insensibility, with efforts to vomit, were the prominent symptoms. Its activity seems to depend on a volatile acid, which is procured by saponifying the fixed oil, by supersaturating the soap with tartaric acid, and then distilling. The acid comes over, and consolidates in the receiver. It unites with alkalies, and forms crystallized compounds.—J. D. M.

Officinal. Radix.

Officinal preparations. Tinctura Hellebori Nigri, *Lond. Edin. Dub.* Extractum Hellebori Nigri, *Edin. Dub.*

Dosis, *a* gr. ij. *ad* iv. radicis ter quaterve indies pro Diuretico; *a* gr. x. *ad* ℈i. pro Cathartico; *a* ʒss. *ad* ʒi. Tincturæ; *a* gr. v. *ad* x. Extracti.

STRYCHNOS NUX VOMICA. Nux Vomica, or Poison-Nut.

Class and Order, PENTANDRIA MONOGYNIA. Nat. Ord. APOCYNEÆ.

GEN. CHAR. *Corolla* tubular, five-cleft; *Berry* one-celled, with a woody rind; *Seeds* two to five.

Strychnos *nux vomica;* stems unarmed; leaves ovate, stalked; cymes subterminal.

S. Nux-vomica, *Lin. Sp. Pl.* 271. *Woodville, Med. Bot.* 3d edit. p. 222. *Roxburgh, Plants of Coromandel*, i. t. 4.

THIS plant is common on the coast of Coromandel and other parts of the East Indies. It forms a low tree with a crooked stem, and smooth ash-coloured bark; leaves nearly round, smooth, shining, entire; fruit a berry the size of an orange, and of a similar colour;

the rind woody, filled with a colourless pulp, in which the seeds or nuts are imbedded; seeds flat and round, about as large as a shilling, and full a quarter of an inch thick; covered with fine silky hairs.

Apocyneæ, to which this genus belongs, is composed of a numerous tribe of plants, all of suspicious nature, and though a few possess innoxious properties, the larger part are active poisons. The seeds of the *Cerbera tanghin* are of so deadly a nature that a single one is sufficient to destroy twenty persons. Those of St Ignatius Bean, and a variety of others of this family, are well known poisons, but the bark of *Strychnos Pseudo-quina* is said to be fully equal to Cinchona in the cure of intermittent fevers, and even the pulp contained in the fruit of the present plant may be eaten without inconvenience.—G.

Nux vomica is an active and virulent poison, and is sometimes used as an instrument of self-destruction, and even as a means of committing murder, though, from its extremely bitter taste, it could not be easily given without the person's knowledge. The effects of this poison on man and animals are very violent; pain and heat in the stomach, constriction of the gullet, twitchings in the limbs, spasmodic action of the diaphragm, unsteady walk, giddiness and nausea are the first symptoms; these are succeeded by violent spasms, convulsive action of the limbs, and opisthotonos and tetanus. Convulsion follows convulsion, and death ensues at a period more or less distant from the time at which the dose was taken, according to the quantity swallowed. Dr Christison mentions numerous fatal cases, and also some where recovery took place, and others where death did not occur from the primary effects of the poison, but from inflammation of the stomach and intestines. Strychnia was discovered in the year 1818 by Pelletier and Caventou in the nux vomica and in the Faba St Ignatii, and more recently in the Tieuté or Upas poison of Java, and the Urari of Guiana. Strychnia is procured by various processes. The most economical is by making an acidulated decoction of the nux vomica, by evaporating it to the consistence of syrup, and by precipitating with caustic, ammonia, or magnesia. It is of difficult preparation, and is only procured in small quantity. A pound of nux vomica yields about 17 or 18 grains of strychnia. The Faba St Ignatii contains about one and a half per cent. Strychnia is one of the most active poisons. Dr Christison says, "I have killed a dog in two minutes with a sixth of a grain injected in the form of alcoholic solution into the chest; I have seen a wild boar killed in the same manner, with a third of a grain in ten minutes; and there is little doubt that half a grain thrust into a wound would kill a man in less than a quarter of an hour. It acts in whatever way it is introduced into the system, but most energetically when injected into a vein." Strychnia is a vegetable alkali, and exerts all the chemical actions which substances of that class do. Notwithstanding its poisonous qualities, it is used in medicine, and, whether given in the form of nux-vomica, or in its purer form of strychnia, it acts very beneficially in some kinds of paralysis, in amaurosis, and other diseases where the nervous system is the seat of the disease. When given in the form of powder, nux vomica ought to be prescribed in a very small dose at first; two or at most three grains will be found sufficient. When strychnia is used, it ought to be combined with an acid, and about the sixteenth of a grain given at first. When violent twitchings of the limbs are observed, or when constitutional disturbance is caused, the medicine ought to be immediately stopped.—J. D. M.

Officinal. Nuclei.

SIMAROUBA OFFICINALIS. SIMAROUBA.

Class and Order, DECANDRIA MONOGYNIA. Nat. Ord. SIMARUBACEÆ.

GEN. CHAR. *Calix* small, five-parted; *Petals* five; *Stamens* five; *Stem* with a scale at the base; *Style* cleft.

Simarouba *officinalis;* flowers monœcious; leaves abruptly pinnate; leaflets alternate, stalked; fruit ovate.

S. officinalis, *Decand. Prod.* p. 733.
Quassia Simarouba, *Willd. Sp. Pl.* ii. p. 568. *Woodville, Med. Bot.* ii. p. 211.

"IT forms a tall tree, with smooth gray bark blotched with yellow; the leaves are pinnate; flower monœcious, pale yellow; male and female flower growing on the same panicles; the fruit consists of five smooth, ovate, purple-black, one-celled berries on a common receptacle, which open spontaneously when ripe;" they bear some resemblance to damsons in shape and colour, from whence they have obtained the provincial application of Mountain Damson.

This species with the *excelsa* were removed from the genus *Quassia* by Decandolle, who retains only the *Quassia amara* in that genus, which he distinguishes from the present one by its possessing hermaphrodite flowers, whilst the Simarouba bears male and female flowers on the same stem, or is polygamous. The officinal part is the bark of the root, which is of an intensely bitter taste, and is imported into this country from the West Indies, where it is a native, as well as several parts of South America.—G.

The bark of the root of the *Simarouba officinalis* is fibrous, rough, covered with warts, and scaly; it is brought to Britain in large pieces; it has very little smell, and a pure bitter taste. Where a simple bitter is required it is useful, and can be given in fevers and inflammatory diseases, as it does not accelerate the pulse or produce those constitutionally stimulant effects which almost all other tonics do. It has been much recommended in anorexia, chronic diarrhœa, and dyspepsia. According to Moren it contains resin rendered soft by the presence of volatile oil; bitter extractive; various salts, and traces of gallic acid.* The bitter principle can be obtained in a state of purity by dissolving the alcoholic extract in water, then precipitating the gum and other matters by acetate of lead, and removing the excess of lead by sulphuretted hydrogen. It is not precipitable by acetate of lead, nor by the salts of iron, silver, copper, nor mercury. It has been named Quassina, and may be considered as pure bitter principle.—J. D. M.

Officinal. Cortex Radicis.
Officinal preparation. Infusum Simaroubæ, *Lond.*
Dosis, *a* ʒss. *ad* ʒi. Corticis; *ab* ℥ij. *ad* ℥iv. Infusi.

* Journal de Pharmacie, viii. 67.

SIMAROUBA EXCELSA. *Lofty or Ash-leaved Simarouba.*

Class and Order, Nat. Ord. and Generic Character, see *S. officinalis.*

Simarouba *excelsa*; flowers polygamous; leaves pinnate; leaflets opposite, petioled; fruit globular.

S. excelsa, *Decand. Prod.* p. 733. *Willd. Sp. Pl.* ii. 569.

THIS, like the preceding species, forms a tall tree, and is also a native of the West Indies. It often attains to the height of one hundred feet. Leaves pinnate; leaflets opposite, on petiols, smooth, entire, pointed, with a terminal one; flowers in large clusters, of a pale yellowish-green; fruit is the size of a large currant, of a deep purple black. The whole of the plant is of an intensely bitter taste, more so than the preceding, and the wood is imported in thick billets, which are reduced to chips or shavings for the purpose of the druggist. The two species now named, as well as the *Quassia amara*, are frequently used by brewers as substitutes for hops; they are said to afford the purest vegetable bitters.

The *Quassia amara* is a low shrub with long spikes of a pale but bright scarlet colour, these are hermaphrodite; leaves pinnate, leaflets opposite, in two pairs, and a terminal one, connected one to the other by their winged foot-stalks; there is no apparent resemblance between this and the *Simaroubas.* Though of a very bitter taste, the two foregoing are so much more so as to have rendered the retaining this species in our Materia Medica unnecessary.—G.

The wood of the Quassia, or *Simarouba excelsa*, is the part used in medicine; it is said by some to be that of the root, by others to be that of the tree itself; its bitterness is more intense than the preceding species, and it is much more frequently prescribed. The bitter principle which it contains is said to differ from that of the *officinalis* in being precipitable by acetate of lead. * Dr Duncan supposes it to have narcotic powers. It is sometimes fraudulently substituted for hops by brewers, though a very heavy penalty is incurred by such a proceeding.—J. D. M.

Officinal. Lignum.

Officinal preparations. Infusum Quassiæ, *Lond.* Tinctura Quassiæ Excelsa, *Edin. Dub.*

Dosis, *a* gr. x. *ad* ʒss. Ligni; *a* ʒi. *ad* ʒii. Tincturæ; *ab* ʒij. *ad* ʒiv. Infusi.

* Berzelius, Traité de Chimié, vi. 244.

COPAIFERA OFFICINALIS. Balsam of Copaiva or Copaiba.

Class and Order, DECANDRIA MONOGYNIA. Nat. Ord. LEGUMINOSÆ.

GEN. CHAR. *Calix* wanting; *Petals* four; *Pod* one-seeded.

Copaifera *officinalis.*

C. officinalis, *Willd. Sp. Pl.* ii. 630. *Woodville, Med. Bot.* p. 609, pl. 216.

THE tree producing the Copaiva Balsam is a native of various parts of South America, is of lofty growth, and forms a large branching head; stems covered with ash-coloured bark; leaves pinnate; flowers in long lax spikes. The drug is obtained by boring the tree to the pith, near the base of the trunk, when it flows abundantly, in the form of a clear colourless liquid, which is thickened, and acquires a yellowish colour by age. The operation is performed two or three times in the same year; and from the older trees the best balsam is obtained. The balsam is of a very pale yellowish colour, of the consistence of thick oil, transparent and lighter than water; it has a strong unpleasant odour, and acrid bitter taste, and a specific gravity of 950. * According to Stolze, 100 parts contain 45.59 of volatile oil; 1.66 of a clammy resin; 52 of brittle resin; and 0.75 of the same resin, with traces of extractive, and some loss. It is often adulterated with castor oil; sulphuric acid appears the best reagent for the discovery of this fraud. On mixing three parts of balsam of copaiva and one part of sulphuric acid, they form a plastic reddish mass; but castor oil, with sulphuric acid, only becomes of the consistence of turpentine, and is not coloured; also when copaiba balsam is mixed with one-fourth of its weight of carbonate of magnesia, the latter is entirely dissolved, and the mixture becomes transparent if the balsam is pure; on the contrary, it becomes more opaque the more the balsam is adulterated. †

Copaiba is used as an expectorant in chronic catarrh, it is powerfully diuretic, and in moderate doses excites the natural functions of the kidneys, and increases the secretion of urine; in over-doses it inflames the kidneys; and it should never be administered when any tendency to ulceration is evidenced in these organs; it may be given either in a fluid state, or formed into soap by combining it with an alkali, by which its active properties are not diminished. The volatile oil of copaiva is rising in estimation, and is frequently administered in cases where the balsam would be objectionable.

In a fluid state it may be given in doses from gr. xxx. to ʒi., combined with sugar and any bland fluid; the dose of soap is from twelve grains to a scruple. From its powerful effects on the urinary organs, it is successfully employed in the chronic states of gonorrhœa and gleet and for fluor albus.—G.

Officinal. Copaiferæ Officinalis Resina Liquida, *Edin.* Copaiba Resina Liquida, *Lond.* Balsamæ Copaivæ, *Dub.*

* Thomson's Elements of Materia Medica and Therapeutics, ii. p. 174.

† Duncan's Dispensatory, p. 409.

ASTRAGALUS. Species various. Tragacanth Plants.

Class and Order, DIADELPHIA DECANDRIA. Nat Ord. LEGUMINOSÆ.

GEN. CHAR. *Keel* of the *corolla* obtuse; *Legume* two-celled, (more or less perfectly;) *Cells* formed by the inflexed margins of the lower suture.

Astragalus Tragacantha, *Lin. Sp. Pl.?*
——— creticus, *Wild. et Decandolle?*
——— verus, *Oliver?*
——— gummifer, *Labilladere?*

GUM TRAGACANTH appears to be the produce of a variety of species belonging to the extensive genus *Astragalus*, and, not as generally esteemed, of an individual species. It is probable that this gum, if not common to the whole genus, is so to that section of it whose petioles are persistent, and which, after the fall of the leaves, become indurated and spinous. The species that produce the officinal drug are natives of Persia, from which country the principal part is obtained that is imported into Britain. The greater number of the species are small prostrate plants of but a few inches in height; a few attain to that of two feet; but they are all of straggling growth. Persoon describes one hundred and sixty-nine species besides varieties, of which the *glycyphyllos* and *hypoglottis* are natives of Great Britain, as also the recently discovered species *A. alpinus*, found abundantly on the Clova mountains in the summer of 1831, by Dr Graham and his botanical party; this species, though new to the British Flora, was among the few plants brought by Captain Parry from the Arctic Regions; and I have specimens gathered on the Altai mountains in 1826, by my friend John Prescot, Esq. of St Petersburgh.

The drug is usually in vermiform, crooked, thread-like masses, of a pearly white colour, semitransparent, brittle, insipid, and without odour. Tragacanth differs very much from gum-Arabic in its properties. It is opaque, white, with difficulty pulverized, unless when thoroughly dried, and the mortar heated, or in frost. Put into water, it absorbs a large proportion of that fluid, increasing immensely in volume, and forming with it a soft paste, rather than a fluid mucilage. Besides these remarkable differences from gum-Arabic, in regard to brittleness, insolubility, and the quantity of water it thickens, Dr Duncan adds, that Tragacanth is not precipitated by silicated potass, and is precipitated by sulphate of copper, acetate of lead, and nitrate of mercury; it is totally insoluble in alcohol. * From its greater viscidity, it is employed in the manufacture of troches; otherwise gum-Arabic is preferred, in most cases, as it is simply useful as a demulcent.—G.

Officinal. Astragalis Tragacanthæ Gummi.

Officinal preparations. Pulvis Tragacanthæ Compositæ, *Lond.* Mucilago Astragali Tragacanthæ, *Edin. Dub.*

* Duncan's Dispensatory, p. 328.

GALBANUM OFFICINALE. *Gum Galbanum.*

Class and Order, PENTANDRIA DIGYNIA. Nat. Ord. UMBELLIFERÆ.

Galbanum *officinale, D. Don. in Trans. Lin. Soc.* xvi. p. 603.

So little information is at present obtained of the plant producing the Gum Galbanum, that I shall only remark, it is certainly not procured from *Bubon Galbanum* of Linnæus. From seeds found among the gum, Mr D. Don considers the plant belongs to a new genus, for which he proposes the name of Galbanum. This, as well as the plants producing Assafœtida and Ammoniacum, are probably natives of Persia, and the drug is imported into Britain from India and the Levant.

Galbanum is imported in masses, also in tears; it is of pale yellowish colour; the tears of which the larger masses are composed are clear, of a whitish hue, of a bitter taste, and a strong unpleasant odour, but without the alliaceous smell of Assafœtida. It abounds in impurities, such as leaves, sticks, seeds, and often sand; when of good quality it is brittle, and is without any other impurities than portions of the stems, leaves, and seeds; is rendered brittle by cold, and readily softens by heat; such samples as abound in earthy and sandy particles are usually of a darker colour, and of a softer substance.

According to M. Pelletier, its components are, resin, 66.86; gum, 19.28; wood and impurities, 7.52; volatile oil and loss, 6.34; super-malate of lime, some traces.* A volatile oil of a fine Indigo blue is obtained from Galbanum. It preserves this colour in alcohol; neither acids nor alkalies change it. It is necessary in distilling it with the naked fire to manage the heat very carefully, in order to obtain this oil.†

In medical properties Galbanum strongly resembles assafœtida, but is less powerful in its operation; it is expectorant and emmenagogue, and may be used, under similar circumstances, where the exhibition of assafœtida is, from its offensive odour, objectionable. As an expectorant, it may be given in doses from gr. x. to ʒss. in combination with ipecacuanha and any narcotic, two or three times a-day.‡—G.

Officinal. Galbani Gummi Resina, *Lond. Dub.* Bubonis Galbani Gummi Resina, *vulgo* Galbanum, *Edin.*

Officinal preparations. Pilulæ Galbani Compositæ, *Lond. Dub.* Pilulæ Assafœtida Compositæ, *Edin.* Tinct. Galbani, *Dub.* Empl. Gummosum, *Edin.* Empl. Assafœtidæ, *Edin.*

* Bulletin de Pharmacie, iv. p. 97.

† Supplement to Duncan's Dispensatory, p. 34.

‡ Thomson's Elements of Materia Medica, ii. p. 165.

FERULA PERSICA. *Assafœtida or Giant Fennel.*

Class and Order, PENTANDRIA DIGYNIA. Nat. Ord. UMBELLIFERÆ.

GEN. CHAR. *Fruit* compressed, flat, thickened at the edge, with three obtuse dorsal ribs, and banded intervals and juncture; *Flowers* polygamous; *Involucre* various.

Ferula *persica;* leaves double compound, acutely cut, decurrent; lowest umbel sessile.

F. persica, *Bot. Mag.* t. 2096. *Willd. Sp. Pl.* 1413.
F. Assafœtida, *Woodville, Med. Bot.* i, p. 22.

THOUGH the present species yields the drug ASSAFŒTIDA, the one known as *F. Assafœtida*, cultivated in Britain in 1782, has long been lost, but several of the species are supposed to yield a substance identical with the officinal drug; "which is procured by cutting across the top of the root, from whence its juices ooze out, and when dry it is scraped off as opium is from the capsule of the poppy. The plant grows three feet high, with yellow flowers, and hemlock-like leaves and habit; it is perennial, and is a native of Persia."—*Loudon.*

The drug is imported in irregular masses, composed of variously coloured clear, shining tears; it has a penetrating garlick-like odour, and a bitter acrid taste. Such samples as have the tears, of which the mass is formed, clear and white, with the bulk of the mass of a pale reddish brown, are to be preferred.

Its analysis by M. Pelletier affords, 65.00 resin; 19.44 gum; 11.65 bassorine; a principle allied to gum; 3.60 volatile oil; some traces of super-malate of lime; loss, 0.30.* Brandes got 46 volatile oil; a trace of phosphorus; 472.5 of resin; 16 of resinoid; 194 of gum; with traces of acetate, malate, sulphate, and phosphate of potass and lime; 64 tragacanthine; 10 of extractive, with malate of potass; 4 of malate of lime, with resin; 35 of carbonate of lime; 4 of oxide of iron and alumina; 60 of water, and 46 of impurities = 1013.5. The smell and taste depend entirely upon the volatile oil, which adheres strongly to the resin.†

Assafœtida is the most powerful of the fœtid gums; it is stimulant, antispasmodic, expectorant, emmenagogue, and anthelmintic. From its stimulant nature, it must not be exhibited when inflammatory symptoms are present; it has been found useful in chronic catarrhs and asthmatic affection of worn-out habits. The best form of administering it as an expectorant is that of pill, combined with ipecacuanha and extract of conium; the dose is from four to twelve grains of the gum resin, to be repeated at short intervals.—G.

Officinal. Ferula Assafœtida Gummi Resina, *Edin.* Assafœtida Gummi Resina, *Lond.* Assafœtida, *Dub.*

* Bulletin de Pharmacie. ii. p. 556.

† Buchner's Repertorium, Bd. vii. S. 1.

Officinal preparations. Mistura Assafœtida, *Lond. Dub.* Tinctura Assafœtida, *Lond. Edin. Dub.* Spiritus Ammoniæ Fœtidus, *Lond. Dub.* Tinctura Castorei Compositæ, *Edin.* Pilulæ Assafœtidæ Compositæ, *Edin.* Pilulæ Assafœtidæ Compositæ, *Edin.* Pilulæ Aloes et Assafœtidæ, *Edin.* Pilulæ Galbani Compositæ, *Lond.* Enema Fœtida, *Dub.*

DOREMA AMMONIACUM. Gum Ammoniacum Plant.

Class and Order, PENTANDRIA DIGYNIA. Nat. Ord. UMBELLIFERÆ.

GEN CHAR. *Dish* epigynous, cup-shaped; *Carpels* compressed, marginate, three intermediate ridges filiform; *Interstices* with single *vittæ*.

Dorema *Ammoniacum. D. Don. in Trans. Lin. Soc.* xvi. p. 599.
Heracleum gummiferum, *Willd.*
Ferula ferulasa, *Defont.*
Ferula persica, *Oliver.*
Bubon gummiferum, *Linnæus, Persoon.*

ALTHOUGH the drug Ammoniacum has been known from the time of Dioscorides, the source from whence it has been obtained has remained in obscurity, and, as will be observed by the synonyms, has been referred to various plants of the family of *Umbelliferæ*. Recently the true plant has been discovered, and Mr D. Don, in the paper above referred to, has given a description of it from specimens "procured by Lieut.-Colonel Wright of the Royal Engineers, in the districts where the gum ammoniacum is collected; namely, in the vicinity of Jezud Khart, a town of Irak El Ajam, the ancient Parthia, about forty-two miles south of Ispahan, and presented by him to the Linnæan Society."

"Every part of the specimen is covered with drops of a gum possessing all the properties of *ammoniacum;* this circumstance alone, independent of any other evidence, would seem sufficient to remove all doubt on the subject. But, besides, I have carefully compared the specimen with the portions of inflorescence and fruit, which are found abundantly intermixed with the gum in the shops, and find them to agree in every particular. To avoid any confusion, and as the plant proves to be a new genus, I propose to call it DOREMA, from the Greek δοϱημα, a gift or benefit; not that I consider the ammoniacum plant as pre-eminently deserving that title, but the name is at least a short one, and agreeable to the ear,—considerations not to be overlooked in nomenclature."

Mr Don further adds, he is indebted for the following particulars to Major Willock, who has visited the district where the plant grows wild. "The OOSHAK, or gum ammoniacum plant, grows in great abundance over the arid plains in the vicinity of the town of Jezud Khart, on the borders of the provinces of Fars and Irak. Jezud Khart is a district appertaining to the government of Ispahan. The plant is perennial, and throws up from the root a cluster of leaves, and one or more strong, vigorous, naked stems, of three or

four feet in height, divided into joints of five or six inches long, throwing out various branches of equal lengths. The white juice which forms the gum pervades the whole plant, but exudes chiefly from the principal stems. It either remains on them in lumps, or, falling to the ground, is gathered by the villagers in autumn, and is sold by them. The Ooshāk plant is to be met with no where but in the province of Irak, growing in very dry plains, gravelly soils, and exposed to an ardent sun."

Several other plants produce a gum of a similar kind, as the *Heracleum gummiferum* of Willdenow, a species which he raised from seeds picked from the drug; and the *H. spondylium*, in dry exposed situations, on being wounded, exudes a juice which soon concretes and has a faint odour of ammoniacum.

The drug is imported in large irregular masses of an olive yellow colour, but whitish within; is tenacious, but breaks with a vitreous fracture; its odour is faint, and of a bitter pungent taste. It abounds in impurities, as seeds, pieces of stalks, leaves, and a variety of extraneous substances.

Is easily pulverized at a low temperature, but the powder unites in mass in warm weather, or on the application of heat. In moderate heat it softens, and is said to loose five per cent. of its weight; it is partly soluble in water, forming a milky-looking emulsion; but on rest it deposits the resin, while about one-fifth of gummy matter remains in solution. The gummy solution reddens the tincture of litmus; it is precipitated by subacetate of lead and oxalate of ammonia. The resinous part of ammoniacum resembles wax in many particulars. It unites with alkalies, forming soapy compounds, having a considerable bitterness; it is dissolved by sulphuric acid, and forms a solution, which is decomposed by water. Nitric acid, aided by heat, decomposes it, and produces a yellow resiniform substance; and, on evaporating the fluid, a yellow resino-bitter residue is procured, which is partially soluble in hot water, and communicates to wool or to silk a beautiful permanent yellow colour, which resists the action both of chlorine and weak alkaline solutions.*

According to the analysis of Braconnot, one hundred parts of ammoniacum contain 18.4 of gum; 70 of resin; 4.4 of a glutinous matter insoluble in water and alcohol; 6 of water; and 1.2 loss. Hagen found 686 resin; 193 gum; 54 gluten (bassorine;) 16 extractive; and 23 sand; loss, 28 = 1000.

Dr Christison informs me he has found it to yield a very small quantity of volatile oil of a powerful ammoniac odour.

Ammoniacum is a stimulant, and is sometimes used as an antispasmodic and expectorant in asthmatic affections; it is usually combined with squill, assafœtida, or sedatives; it may also be administered in conjunction with ammonia.—G.

Officinal. Ammoniacum. *Lond. Edin. Dub.*

Officinal preparations. Mistura Ammoniaci. *Lond. Dub.*

Pilulæ Scillæ Compositæ. *Lond. Edin. Dub.* Emplastrum Ammoniaci. *Lond. Edin. Dub.* Emplastrum gummosum, *Edin.* Emplastrum Ammoniaci cum Hydragyro. *Lond. Dub.*

* Thomson's Elements of Materia Medica, ii. p. 163–4. Duncan's Dispensatory, 11th Ed. p. 267.

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